

## SEE-KIONG NG 黄思强, Ph.D.

*Professor of Practice, Department of Computer Science, School of Computing  
and  
Director of Translational Research, Institute of Data Science  
National University of Singapore*

AS6, #05-09, 13 Computing Drive, Singapore 117417 • [seekiong@nus.edu.sg](mailto:seekiong@nus.edu.sg)  
<http://www.comp.nus.edu.sg/~ngsk>

**Profile:** Multi-lingual, multi-cultural, well-published, cross-disciplinary computer scientist, technology executive and professor specializing in data analytics, artificial intelligence, smart cities, and bioinformatics; balanced experience in industry, academia and research institutes; start-up and corporate industry experience; international exposure in the US, UK, and Asia (Singapore, India, South Korea, China and Japan); practical skills in both conducting individual research and managing inter-disciplinary research teams; post-graduate lectureship and student supervision.

### Education

- **Ph.D. in Computer Science** with the thesis “Automating Computational Molecular Genetics”; **M.S. in Computer Science.**  
Carnegie Mellon University, School of Computer Science. 1990–1991, 1993–1998.
- **M.S.E. in Computer and Information Science (Artificial Intelligence)**  
University of Pennsylvania, Department of Computer and Information Science. 1989–1990.
- **B.S. in Applied Mathematics (Computer Science Track)** with university honor  
Carnegie Mellon University, Mellon College of Science. 1986–1989.

### Professional Experience

- **Professor of Practice.** School of Computing, NUS, Singapore. 2016-present.  
Conducts applied research in data science and artificial intelligence that enables computational discovery of useful knowledge from data that lead to effective informed decision making and planning for challenging real-world problems. Joint-appointment with Institute of Data Science.
- **Director, Translational Research.** Institute of Data Science, NUS, Singapore. 2016-present.  
Oversees engagements with various external stakeholders to promote translation of the data science research at the institute to solve challenging data-driven problems that are relevant to the government and industry.
- **Director, Strategic Alliances.** Institute for Infocomm Research, Singapore. 2013-2016.  
Part of the institute’s senior management team to assist the Executive Director in directing the activities and growth of the organization. Responsible for overseeing I<sup>2</sup>R’s Research and Commercialization Hub that comprises of joint labs with strategic industry partners and

technology adopters including MNCs, LLEs, and public agencies to establish long term partnerships for value capture of the institute's R&D efforts.

- **Programme Director.** Urban Systems Initiative, A\*STAR, Singapore. 2012-2015. As the SERC (Science and Engineering Research Council) Programme Director to oversee and integrate research programmes involving multiple research institutes on smart cities under the A\*STAR Urban Systems Initiative. The Initiative seeks to develop key technological capabilities for Smart Nation through active partnerships with public agencies and private sector players, leveraging on infocomm advances in big data, complexity science, and artificial intelligence to enable innovative urban solutions for smart cities.
- **Principal Scientist; Department Head; Department Advisor.** Institute for Infocomm Research, A\*STAR, Singapore. 2000-2016.

*Principal Scientist (2010-2016); Senior Scientist (2000-2010).* Conducts research in applied data mining, machine learning, and artificial intelligence, with a focus on mining complex data (networks, links) and also unstructured data (free text). Early research in text mining and bioinformatics has resulted in a successful overseas bioinformatics joint-venture (see *Concurrent Appointments* below). Since founding the Data Analytics Department in I<sup>2</sup>R, have groomed an award-winning data mining team for a wide range of real-world application domains beyond bioinformatics. Published more than 100 papers in leading peer-reviewed journals and conferences across multiple disciplines. Promoted to Principal Scientist II, the highest rank for research scientists in A\*STAR, in 2014.

*Department Heads (2005-2016, multiple departments).*

- *Founding Department Head, Data Analytics Department (DAD, 2005-2012):* Founded the Data Analytics Department in 2005 and grew the department from 15 members to more than 50 by 2012. Transformed the department from a niche bioinformatics group into an award-winning data mining team in Singapore with the largest number of data scientists. Expanded into new research domains for data analytics such as social network mining, privacy-preserving data analytics, and semantic web. Successfully attracted industry collaborations from multiple verticals, ranging from advanced manufacturing to financial services, and spun out two successful start-up companies (Knorex and 9 Degrees Freedom) from the department. Also served as a member of the institute's Core Management Team in 2007-2009.
- *Founding Department Head, Urban Systems Department (URBAN, 2012 - 2016):* Founded the Urban Systems Department in 2012, focusing on developing a real-world data analytics platform (A\*DAX) for R&D innovations to harness the power of big data in the city into new urban solutions for the city from urban mobility to city planning. In less than 3 years, grew the department from scratch to a team of about 20, with the A\*DAX platform successfully testbedded in Singapore's first Smart City Testbed in Jurong Lake District through collaborating with a local system integrator.
- *Sense and Sense-abilities Department (S&S, 2015-2016):* Took over the department in 2015, re-profiled into a 20-plus team with a balanced mix of research and development capabilities. Expanded the scope of the department to focus on developing intelligent sensing systems for smart applications ranging from environment sensing to industry 4.0. Groomed a deputy department head to take over the department in a year.

Department Advisor (2012-2015)

- Served as the Department Advisor for Data Analytics Department (DAD) and successfully groomed a new department head in 2011 who has continued to bring DAD to the next level with award-winning research and multiple successful industry collaborations.

Lab Head (2001-2004). Managed a data mining team with a focus on bioinformatics in the Knowledge Discovery Department. Also served as Deputy Department Manager between 2003-2004.

- **Associate Professor.** Singapore University of Technology and Design, Singapore. 2011-2015. As one of the pioneering faculty members of Singapore's fourth university, under the Information Systems Technology and Design pillar. (Joint appointment with A\*STAR).
- **Principal Scientist.** DNA Sciences (formerly Kiva Genetics), Mountain View, California, United States. 1999-2000. Responsible for developing proprietary genomic data analysis algorithms for SNP genotyping, and involved in the implementation of a fully-integrated production laboratory information management system (LIMS) for ultra-high throughput genotyping with novel miniaturized microcapillary technologies.
- **Senior Investigator.** SmithKline Beecham Pharmaceuticals R&D, Harlow, United Kingdom. 1998-1999. Responsible for developing and supporting in-house bioinformatics software solutions to address the practical computational needs of biologists and geneticists in large-scale pharmacogenomics projects, focusing on microsatellite genotyping.
- **Post-Doctoral Scientist.** Laboratory of Bioinformatics, Keio University, Japan. 1998. Performed research on the estimation of kinetic parameters for complex biochemical pathways using machine learning approaches for *in silico* cellular simulation using E-CELL.
- **Software Consultant.** Cybergenetics Inc., Pittsburgh, United States. 1996-1998. Solely responsible for the conversion of *FAST-MAP*, an academic bioinformatics software written for my Ph.D. thesis, into *TrueAllele*<sup>TM</sup>, a commercial version licensed internationally. Supported worldwide customers such as DECODE Genetics (Iceland), SmithKline Beecham (UK), and National Institute of Health (USA).
- **Research Engineer.** Systems & Computer Organization, Singapore. 1991-1992. Involved in team research, design, and implementation of a system for computer-aided text summarization for the Ministry of Defense in Singapore.

Concurrent Appointments

- **Centre Director.** Business Analytics Translational Centre (BATC), Singapore. 2012-2013. As the founding centre director for BATC, a cross-agency initiative between A\*STAR (Institute for Infocomm Research and Exploit Technologies Pte Ltd) and IDA to catalyze innovation, perform technology translation, and drive adoption of Business Analytics.

- **Adjunct Associate Professor.** Department of Biochemistry, National University of Singapore (NUS), Singapore. 2010-2011. Guest lectures and supervision of student research projects.
- **Adjunct Associate Professor.** School of Computer Engineering, Nanyang Technological University (NTU), Singapore. 2003-2010. Co-teaching a Masters level bioinformatics course on “Tools and Methods in Proteomics”.
- **Adjunct Research Fellow.** Singapore Eye Research Institute (SERI), National University of Singapore, Singapore. 2007-2010. Honorary appointment for involvement and contribution to research in SERI.
- **Acting Director of Technology.** Molecular Connections Inc., Bangalore, India. 2001-2002. Facilitated the transfer of our biomedical text mining technology into this bioinformatics start-up, which is a joint-venture between our institute and ideas2solutions, a subsidiary of Dr. Reddy’s Lab (DRL). Spent halftime for a 12-month period stationed in India, recruiting and directing the pilot team of engineers and biologists to create the company’s pilot flagship prototype.

**See-Kiong Ng, Ph.D.**  
**Attachment I – Professional Activities and Awards**

**International Committees**

- Committee on *A Global Review of Data-to-Decision Technologies: Integrating Humans, Machines and Networks*, Board of Global Science and Technology, National Academy of Sciences, USA (2012-2014)

**National Committees**

- Member, IT & Digital Advisory Panel (ITDAP), National Gallery Singapore (2016-present)
- Academic and Industry Group, Enabling ICT and Platforms Workgroup for National Innovation Challenge (NIC) on *Land and Liveability* (2013-2016)
- Member, Mid-term Review Panel, Singapore-ETH Centre – Future Cities Laboratory (FCL) (2013)
- Expert panel member, National Research Foundation Technology Foresight on *Urban Solutions* (2013)
- Member of the Science and Engineering Research Council (SERC) Public Sector Funding Technical Review Panel (PSF-TRP) (2013-present)
- Co-chairperson of Technical Review Panel for A\*STAR's Science and Engineering Research Council (SERC) Thematic Programmes under Infocomm, Media and Computing Cluster (2014-2016)
- Technical Reviewer for the Land and Liveability National Innovation Challenge (L2 NIC) R&D Proposals (2014-2017)

**International and National Awards**

- MTI Borderless Award, as project member of the Green Growth Working Group (G3) to advance national efforts in green growth initiatives and narrative, 17<sup>th</sup> June 2014.
- A\*STAR Borderless Award, as team leader of the Urban Systems Initiative, 9<sup>th</sup> April 2014.
- MTI Innovation Award, in recognition of the winning project on Strategic Technology Translation in Business Analytics, 3 May 2013
- Winner of PAKDD 2012 Data Mining Competition Open Category, Problem 1: Predicting potential churners and ex-customers who are likely to come back (2012)
- Best Paper Runner-Up Award, 16<sup>th</sup> International Conference on Database Systems for Advanced Applications (DASFAA) (2011)
- Best Poster Award, 12<sup>th</sup> Annual International Conference on Research in Computational Molecular Biology (RECOMB) (2008)
- Best Paper Award, 16<sup>th</sup> International Conference on Genome Informatics (GIW) (2005)
- Winner of the First Golden Point Award (Chinese Short Story category) by National Arts Council (1992)
- Recipient of the National Computer Board (NCB) Undergraduate Overseas Scholarship (1986-9)

**Invited Talks**

- “Navigating the Age of Big Data and Artificial Intelligence”, invited talk, DSTA Academy Technology Talks, Defence Science and Technology Agency (DSTA), Singapore, 18 May 2017.

- “The Science of Data + X”, invited talk, A\*STAR Scientific Symposium, Singapore, 2 August 2016.
- “Making Cities Smarter with Big Data”, invited talk, First Urban Cities and Local Governments (UCLG) Executive Bureau Forum, Kazan, Russia, 26-28 May 2016.
- “Harnessing Big Data to Make Cities Smart”, **invited keynote**, AI Forum 2016, Hualian, ROC, 29-30 April 2016.
- “Addressing the New Challenges of the Rapidly Urbanizing World with Big Data”, invited talk, 2<sup>nd</sup> Asia-Pacific Conference on Complex Systems Design & Management, Singapore, 24-26 February 2016.
- "Harnessing Big Data and Data Analytics to Improve the Lives of Citizens in Smart Cities", invited talk, TM Forum Smart City InFocus 2015, Yinchuan, People's Republic of China, 11-13 September 2015.
- “Smart Cities and Big Data: Opportunities and Challenges”, **invited keynote**, 13th International Conference on Smart Homes and Health Telematics “Inclusive Smart Cities and e-Health” (ICOST 2015), Geneva, Switzerland, 10-12 June 2015.
- “Unravelling Big Data for Smart Cities”, invited talk, International Smart Cities Initiative (SCI2015) Workshop, held in conjunction with Information and Communication Technology Research Forum (ICTRF), Abu Dhabi, UAE, 18 May 2015.
- “Smart Cities and Big Data: Opportunities and Challenges”, invited talk, Information and Communication Technology Research Forum (ICTRF), Abu Dhabi, UAE, 17 May 2015.
- “Transforming Singapore into a Smart Nation”, invited talk, International Forum on Smart National Territory Development Strategies 2015, Taipei, ROC, 11-13 May 2015.
- “Data Analytics for Smart Future Cities”, invited talk, Ovum’s 4<sup>th</sup> Annual Urban IoT / Smart to Future Cities 2015, London, United Kingdom, 28-29 April 2015.
- “Realizing Data Economy for Smart Nation”, invited talk, the first Roundtable of Thought Leaders on Innovation in Cities, the Lee Kuan Yew Centre for Innovative Cities, Singapore, 19-20 January 2015.
- “Addressing the New Challenges of the Rapidly Urbanizing World through Technology and Innovations”, Future Cities Asia, invited talk, Future Cities Asia, Hong Kong, 14-16 October 2014.
- “Addressing the New Challenges of the Rapidly Urbanizing World through Technology and Innovations”, Opening Address (day 2), Safe Cities Asia, Singapore, 27-30 May 2014.
- “Be Actionable-Ready: From Big Data to Smart Data”, invited talk, NCS TechConnect, Singapore, 23 May 2014.
- “Big Data in the City: A Game-Changer for Building Better Cities”, invited talk, First EMTech Singapore, 20-21 January 2014.
- “From Bright Lights, Big Cities to Smart Cities, Big Data”, invited talk, First DEXTRA Workshop, 1 August 2013.
- “Smart Cities, Big Data – Urban Systems Initiative”, invited talk, Urban Sustainability R&D Congress, Singapore, 27-28 June 2013.
- “Advanced Interdisciplinary Research towards Innovation – From understanding the biology of human body to unraveling the biology of human cities”, invited talk, 1<sup>st</sup> e-ASIA JRP Symposium, Singapore, 04 December 2012.
- “Unravelling Big Data: Empowering Your Business with Analytics”, invited panelist, Singtel’s *i.luminate* Business Innovations Forum, Singapore, 06 Nov 2012.
- “Making better decisions improves productivity – analytics is the key”, invited panelist, 18th IT Best Practices (ITBP) Seminar, Singapore, 30th October 2012.
- “Urban Systems Analytics: The Way We (will) Live”, invited talk, 19<sup>th</sup> Infocomm Media Horizons, Fusionopolis Singapore, 15-16 August 2012.

- “Urban Systems Initiatives: Urban Solutions for Tomorrow’s Smart Cities Today”, invited talk, Smart City Workshop 2012 Singapore, Hitachi Asia R&D, 3 August 2012.
- “Unleash the Power of Information: From Open Science to Open Governments”, invited talk, Web Science and Open Data Workshop, A\*STAR and University of Southampton, 12 March 2012.
- “Mining for Knowledge: From Biological to Medical Data”, invited talk, International Symposium on Infocomm & Media Technology in Bio-Medical & Healthcare Applications (3T-in-3A), Chiba University, Japan, 21 February 2012.
- “Data Mining for Supply Chain Analytics”, invited talk, Infocomm Professional Development Forum, Infocomm Development Authority (IDA) and Singapore Computer Society, 7 July 2011.
- “Unravelling Protein-Protein Interaction Networks”, invited talk and panelist, BioComplexity Symposium: System Biology Approach to Systems Drug Discovery and Systems Medicine, National University of Singapore, 14 February 2011.
- “The Alchemy of Data: Using Data Mining and Semantics to turn raw data into gold”, invited talk and panelist, Whole-of-Government Data Management Forum, Ministry of Finance and the Infocomm Development Authority, 7 January 2011.
- “Intelligent Geospatial Data Mining”, invited talk, Geospatial Information and Technology Exchange Forum (GITEX), Singapore Land Authority, 30 April 2010.
- “Medical Applications of Data Mining”, invited talk, Chiba University, Japan, 30 March 2010.
- "Searching for Rising Stars in Researchers' Collaboration Networks", invited talk, Seoul National University, Korea, 13 November 2009.
- "Searching for Rising Stars in Bibliography Networks", invited research presentation for the Workshop on Mining User-Generated Content, Singapore Management University, 8 August 2009.
- “Unraveling the Building Blocks of Protein-Protein Interaction Networks”, invited seminar, Institute for Chemical Research, Kyoto University, Japan, 20 April 2009.
- “Deciphering Protein-Protein Interactions – Experimentally and Computationally”, invited guest lecture, School of Biological Sciences, Nanyang Technological University, 10 September 2008.
- “Network Data Mining”, invited lecture for *A Short Course on Introduction to Data Mining* organized by the Pattern Recognition and Machine Intelligence Association (PREMIA), National University of Singapore, 28 June 2008.
- “Data Mining for Real”, invited guest lecture, School of Computer Science, National University of Singapore, 4 April 2008.
- “Computing Protein-Protein Interactions”, invited guest lecture, School of Biological Sciences, Nanyang Technological University, 29 August, 2007.
- “Mining the Protein-Protein Interaction Networks”, invited speaker for the *Bioinformatics for Biologists* seminar series, Office of Life Sciences, National University of Singapore, 30 January, 2007.
- “Fishing for Knowledge in Real-World Networks”, invited speaker for the *Knowledge Management Workshop*, Exploit Technologies, Singapore, 10 January, 2007.
- “Unraveling the Common Denominators in Protein Interaction Networks”, invited **keynote** for the International Symposium on Computational Biology and Bioinformatics, India, 15-17 December 2006.
- “Uncovering the Biological Building Blocks of Protein Interaction Networks”, invited plenary speaker for the 8<sup>th</sup> National Symposium on Biology, Malaysia, 5-7 December 2006.

- “Dissecting Protein Interaction Networks with Meso-scale Network Motifs”, invited speaker for the *Fifth Korea-Singapore Workshop on Bioinformatics and NLP*, KAIST, Korea, 17 Nov 2006.
- “Pictures of the Future: Services”, invited speaker at Siemens Corporate Technology, Munich, Germany, 8 November 2006.
- “Unraveling Multi-Domain Dependencies in Protein-Protein Interactions”, invited **keynote** for the First International Conferences on Computational Systems Biology, Shanghai, 20-23 July 2006.
- “Extracting and Exploiting Protein-Protein Contrasts from Biomedical Literature”, invited speaker for the *CHIME Text Processing Seminar*, School of Computing, National University of Singapore, 1 Mar 2006.
- "BioContrasts: Protein-Protein Contrasts from Biomedical Literature", invited speaker for the *First International Symposium on Languages in Biology and Medicine*, KAIST, Korea, 26 Nov 2005.
- "Computational Purification of Protein Interactomes Using Network Topological Metrics", invited speaker for the *BIOINFO2005 AASBi Conference*, Busan, Korea, 23 September 2005.
- "Detecting False Positives and False Negatives in Protein Interactome using Network Topology", invited speaker for the *NTU BIRC Workshop on Computational Analysis of Proteomics Data*, NTU, Singapore, 16 June 2005.
- "Smart Bio-Laboratories of the Future", invited paper for *ISCAS 2005: Life Science Systems*, Kobe, Japan, 26 May 2005.
- "Detecting False Positives and False Negatives in Protein Interactome using Network Topology", invited speaker for *IMS Workshop on Data Analysis and Data Mining in Proteomics*, NUS, Singapore, 12 May 2005.
- "A Better Tomorrow with Bioinformatics", invited speaker for *ACJC Symposium*, ACJC, Singapore, 15 Mar 2005.
- "Enabling On-the-Go Equipment Access in a Smart Bio-Laboratory", invited speaker for *Digital Convergence Conference*, Singapore, 27 Sep 2004.
- "Literature Mining for Interaction Pathway Discovery", invited proposal presentation for *TREC Genomics Pre-Track Presentation*, JDCL-2002, Portland, USA, 18 Jul 2002.
- "Literature Mining for Interaction Pathway Discovery", invited speaker for *IMS Workshop on Post-genome Knowledge Discovery*, NUS, Singapore, 30 May 2002.
- "Pathweaver: System, Studies, Results, Collaboration", *Invited Workshop on NLP and Ontology in Biology*, Tokyo, Japan, 20 Feb 2002.
- "Laboratories of the Future: Accelerating Life Sciences Research with Leading-edge IT", invited speaker at the National Library, Singapore, 16 Oct 2001.
- "Decoding the Book of Life: Sequences, Genotypes, A, C, G, and T", invited speaker at the National Library, Singapore, 20 Mar 2001.



***See-Kiong Ng, Ph.D.***

***Attachment II – Research Activities and Publications***

**Editorial Boards**

- International Journal of Data Mining and Bioinformatics (IJDMB), Inderscience Publishers (Editorial Board Member, 2006–2013)
- International Journal of Knowledge Discovery in Bioinformatics (IJKDB), IGI Global Publishing (Co-Editor-in-Chief, 2010-2013)

**Conference Technical Program Committee Chairs and Steering Committees**

- 1<sup>st</sup> Workshop on Data Mining for Smart Cities (IEEE ICDM-2015) – General co-Chair
- 1<sup>st</sup> -6<sup>th</sup> Workshop on Biological Data Mining and its Applications in Healthcare (IEEE ICDM-2010-2015) – PC co-Chair
- 25<sup>th</sup> International Conference on Advanced Information Networking and Applications (IEEE AINA 2011) – Distributed Database and Data Mining Track co-Chair
- 19<sup>th</sup> International Conference on Genome Informatics (GIW-2008) – PC co-Chair
- 18<sup>th</sup> International Conference on Genome Informatics (GIW-2007) – PC co-Chair
- International Symposium on Languages in Biology and Medicine (LBM) – Steering Committee (2007 - 2011)

**Conference Technical Programme Committee Memberships**

- AAAI Conference on Artificial Intelligence (AAAI) (2018)
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) (2013-17)
- Asia Pacific Bioinformatics Conferences (APBC) (2004-5)
- Asian Conference on Machine Learning (ACML) (2009-13)
- Atlantic Web Intelligence Conference (AWIC) (2008)
- BioLINK Workshop, in conjunction with HLT/NAACL (2004)
- BIOINFO2005, a joint event comprising INCOB2005, AASBi2005 and KSBi2005 (2005, Regional Chair)
- European Conference on Computational Biology (ECCB) (2008, 2009 [ISMB/ECCB], 2010, 2011[ISMB/ECCB])
- European Conference on Evolutionary Computation, Machine Learning, and Data Mining in Bioinformatics (EvoBIO) (2008-10)
- Frontiers in the Convergence of Bioscience and Information Technologies (FBIT) (2007)
- IEEE Conference on Healthcare Informatics, Imaging and Systems Biology (HISB) (2011)
- IEEE International Symposium on Bioinformatics and BioEngineering (BIBE) (2007, 2011)
- IEEE International Symposium on Bioinformatics and Biomedicine (BIBM) (2008-11)
- IEEE International Conference on Data Mining (ICDM) (2010-16)
- IEEE International Conference on Granular Computing (GrC) (2006-7, 2010-11)
- IEEE International Conference on Systems, Man, and Cybernetics (SMC) (2015)
- Intelligent Systems for Molecular Biology (ISMB) (2003, 2006, 2007, 2009 [ISMB/ECCB], 2010)
- International Bioinformatics Workshop (IBW) (2010)
- International Conference on Bioinformatics (2010-11)
- International Conference on Bioinformatics and Computational Biology (BICoB) (2010)
- International Conference on Bioinformatics Research and Development (BIRD) (2007-8)
- International Conference on Computational Systems Biology (ICCSB) (2006)

- International Conference on Data Integration in the Life Sciences (DILS) (2009-10)
- International Conference on Genome Informatics (GIW) (2004-6, 2007 [PC co-Chair], 2008 [PC co-Chair], 2009-10)
- International Conference on Information Technology in Bio- and Medical-Informatics (ITBAM) (2009)
- International Conference on Machine Learning and Applications (ICMLA) (2008-2012)
- International Conference on Social Informatics (SocInfo) (2011-13)
- IEEE International Conference on Tools with Artificial Intelligence (ICTAI) (2011-13)
- International Joint Conference on Artificial Intelligence (IJCAI) (2017 – Senior PC member)
- International Joint Conference of Natural Language Processing (IJCNLP) (2004)
- International Symposium on Foundations and Frontiers of Data Mining (FFDM) (2012)
- International Symposium on Integrative Bioinformatics (2008, 2010)
- International Symposium on Languages in Biology and Medicine (LBM) (2005,2009, 2011)
- International Symposium on Semantic Mining in Biomedicine (2005, 2008, 2010)
- International Workshop on Data Integration in the Life Sciences (DILS) (2009)
- International Workshop on Data Mining for Biomarker Discovery (DMBD) (2009,2010)
- International Workshop on Social Networks Interoperability (2009)
- Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD) (2012-15)
- RECOMB Satellite Conference on Regulatory Genomics (2006)
- Symposium of Computations in Bioinformatics and Bioscience (SCBB) (2006)
- Symposium on Combinatorics, Algorithms, Probabilistic and Experimental Methodologies (2007)
- Workshop (ACM CIKM-2009) - Complex Networks meet Information & Knowledge Management (2009)
- Workshop on Data Analytics for Renewable Energy Integration (DARE), in conjunction with ECML PKDD (2013-14)
- Workshop on Data and Text Mining for Integrative Biology, in conjunction with the 10th ECML/PKDD (2006)
- Workshop on Data Mining and Bioinformatics, in conjunction with the International Conference on Computational Science and Its Applications (2005)
- Workshop on Data Mining for Biomedical Applications, in conjunction with the 10<sup>th</sup> PAKDD (2006)
- Workshop on Knowledge Discovery in Life Science Literature, in conjunction with the 10<sup>th</sup> PAKDD (2006)
- Workshop on Pattern Recognition in Bioinformatics (PRIB) (2007-8)

### **Journal Paper Reviewing**

- ACM Transactions on Asian Language Information Processing (2005, Special Issue on Text Mining and Management in Biomedicine)
- ACM Transactions on Knowledge Discovery from Data (2010)
- Bioinformatics Journal (2003-present)
- BMC Journal of Bioinformatics (2003-present)
- BMC Journal of Microbiology (2005)
- BMC Journal of Genomics (2006, 2008)
- Computer Methods and Programs in Biomedicine (2007)
- IEEE/ACM Transactions on Computational Biology and Bioinformatics (2007)
- IEEE Intelligent Systems (2005)
- IEEE Transactions on Circuits and Systems I (2006)

- IEEE Transactions on Knowledge and Data Engineering (2004, Special Issue on Mining Biological Data)
- *In Silico* Biology (2006)
- Journal of Bioinformatics and Computational Biology (2003-present)
- Journal of Biomedical Informatics (2004, Special Issue on Natural Language Processing in Biomedicine: Aims, Achievements and Challenges)
- Journal of Biomolecular Structure & Dynamics (2006)

### **International Research Grant Reviewing**

- U.S. – Israel Binational Science Foundation (2007)
- The Wellcome Trust, United Kingdom (2007)

### **Research Grants**

- “Urban Systems Programme Office”, SERC Grant 1224710058, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2012-2015). Programme Director.
- “A\*STAR – IDA Business Analytics Center (BAC)”, Commercialization of Technology (COT) Grant No: ETPL/10-S10COT-0020, Exploit Technologies, Singapore (2011). Principal Investigator.
- “Hippocratic Data Stream Cloud for Secure, Privacy-Preserving Data Analytics Services”, SERC Grant No: 102 158 0037, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2010). Principal Investigator.
- “Enabling Medical Research with Differential Privacy”, SERC Grant 102 158 0074, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2010). Co-Investigator.
- “Advanced techniques for Handling Imbalanced and Unlabelled Data for Classification”, SERC Grant No: 102 155 0091, SERC Aerospace Programme, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2010). Co-Investigator.
- “ISyNCC – Intelligent System for Neuro Critical Care”, SERC Grant No: 092 148 0067, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2009). Co-Investigator.
- “A Personalized and Adaptive Literature Curation System for the Biomedical Sciences”, BMRC Grant No: 041/1/31/19/377, Biomedical Research Council, Agency for Science, Technology and Research, Singapore (2005). Co-Investigator.
- “Smart Laboratory Initiative: The Virtual Lab Dashboard”, *Embedded and Hybrid Systems Programme (Main Phase)*, Project No. 022-106-0047, Science and Engineering Research Council, Agency for Science, Technology and Research, Singapore (2003). Principal Investigator.
- “Smart Laboratory Initiative”, *Embedded and Hybrid Systems Pilot Projects*, Project No. 012-106-0059, Science and Engineering Research Council (SERC), National Science and Technology Board (2001). Principal Investigator.

## **Publications & Patents**

### **Books (5)**

- X. Li, S.-K. Ng, and J. Wang (Eds.) (2014) “Biological Data Mining and its Applications in Healthcare”, World Scientific, Jan 2014, 436 pages.
- X. Li and S.-K. Ng (Eds.) (2012) “Computational Knowledge Discovery for Bioinformatics Research”, IGI Global, USA, June 2012, 463 pages.
- X. Li and S.-K. Ng (Eds.) (2009) “Biological Data Mining in Protein Interaction Networks”, IGI Global, USA, May 2009, 419 pages.
- J. Arthur and S.-K. Ng (Eds.) (2008) “Genome Informatics 2008”, Imperial College Press, London, December 2008, 252 pages.
- S.-K. Ng, H. Mamitsuka, and L. Wong (Eds.) (2007) “Genome Informatics 2007”, Imperial College Press, London, December 2007, 199 pages.

### **Book Chapters (6)**

- H. Willy, W.-K. Sung and S.-K. Ng (2013) “Discovering Interacting Domains and Motifs in Protein-Protein Interactions”, in *Data Mining for Systems Biology (Methods in Molecular Biology Series, Vol 939)*, H. Mamitsuka, C. DeLisi, and M. Kanehisa (Eds), Chapter 2, pages 9-20, Springer, UK, January 2013.
- X. Li and S.-K. Ng (2008) “Positive Unlabeled Learning for Document Classification”, in *Encyclopedia of Data Warehousing and Mining (2nd Edition)*, J. Wang (Ed), pages 1552-1557, IGI Global, USA, August 2008.
- S.-K. Ng (2006) “Integrating Text Mining with Data Mining”, in *Text Mining for Biology and Biomedicine*, B. Stapley, S. Ananiadou (Eds.), Chapter 10, pages 247-266, Artech House Books, London, January 2006.
- S.-K. Ng (2005) “Constructing Biological Networks of Protein-Protein Interactions”, in *Information Processing and Living Systems*, V.B. Bajic, T.W. Tan (Eds.), Chapter 11, pages 653-671, World Scientific Publishing, June 2005.
- S.-K. Ng (2004) “Molecular Biology for the Practical Bioinformatician”, in *The Practical Bioinformatician*, L. Wong (Ed.), Chapter 1, pages 1-30, World Scientific Publishing, May 2004.
- S.-H. Tan, S.-K. Ng (2004) “Discovering Protein-Protein Interactions”, in *The Practical Bioinformatician*, L. Wong (Ed.), Chapter 13, pages 293-318, World Scientific Publishing, May 2004.

## **Journal Papers (42)**

- A. T. Luu, H. S. Cheung, and S.-K. Ng (2016) “Utilizing Temporal Information for Taxonomy Construction”, in *Transactions of the Association for Computational Linguistics (ACL)*, Vol 4, p. 551-564, December 2016.
- Y. Hu, T. Hase, H. P. Li, S. Prabhakar, H. Kitano, S.-K. Ng, S. Ghosh, L. Wee (2016) “A Machine Learning Approach for the Identification of Key Markers involved in Brain Development from Single-cell Transcriptomic Data”, in *BMC Genomics*, Vol 17 (Suppl 13), December 2016.
- G. Liu, H. Zhang, M. Feng, L. Wong, and S.-K. Ng (2015) “Supporting Exploratory Hypothesis Testing and Analysis”, in the *ACM Transactions on Knowledge Discovery from Data (TKDD)*, Volume 9 Issue 4, Article No 31, June 2015.
- H. Han, X.-L. Li, S.-K. Ng, and J. Zhou (2013) “Multi-Resolution-Test for Consistent Phenotype Discrimination and Biomarker Discovery in Translational Bioinformatics”, in the *Journal of Bioinformatics and Computational Biology*, doi: 10.1142/S0219720013430105.
- H. Cao, X.-L. Li, Y.-K. Woon, and S.-K. Ng (2013) “Integrated Oversampling for Imbalanced Time Series Classification”, in the *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, vol 25 (12), pages 2809-2822.
- Daniel L.-K. Wong, X.-L. Li, M. Wu, J. Zheng, and S.-K. Ng (2013) “PLW: Probabilistic Local Walks for Detecting Protein Complexes from Protein Interaction Networks”, in *BMC Genomics (InCoB2013 Conference Supplements)*, vol 14 (suppl 5):S15.
- P. Yang, X.-L. Li, J.-P. Mei, C.-K. Kwoh, and S.-K. Ng (2012) “Positive-Unlabeled Learning for Disease Gene Identification”, in *Bioinformatics*, vol 28(20), pages 2640-2647.
- S. Awad, N. Panchy, S.-K. Ng, and J. Chen (2012) “Inferring the Regulatory Interaction Models of Transcription Factors in Transcriptional Regulatory Networks”, in the *Journal of Bioinformatics and Computational Biology*, Vol. 10:5.
- M. Wu, X. Li, C.-K. Kowh, S.-K. Ng and L. Wong (2012) “Discovery of Protein Complexes with Core-Attachment Structures from TAP Data”, in *Journal of Computational Biology*, Vol 19:9, pages 1027-1042.
- E. Y. Cheu, C. Quek and S.-K. Ng (2012) “ARPOP: An Appetitive Reward-based Pseudo-Outer-Product Neural Fuzzy Inference System Inspired from The Operant Conditioning of Feeding Behavior in Aplysia”, in *IEEE Transactions on Neural Networks*, Vol 23:2, pages 317-329.
- H. Willy, S.-K. Ng and W.-K. Sung (2011) “D-SLIMMER: Domain-SLiM Interaction Motifs Miner for Sequence Based Protein-Protein Interaction Data”, in *Journal of Proteome Research*, Vol 10:12, pages 5285-5295.
- P. Yang , X. Li, M. Wu, C.-K. Kwoh, S.-K. Ng (2011) “Inferring Gene-Phenotype Associations via Global Protein Complex Network Propagation”, in *PLoS ONE*, 6(7): e21502.

- S. Teddy and S.-K. Ng (2011) “Forecasting ATM Cash Demands using a Local Learning Model of Cerebellar Associative Memory Network, in *International Journal of Forecasting*, vol 27, pages 706-776.
- M. Wu, H. N. Chua, X. Li, C.-K. Kwoh, and S.-K. Ng (2010) “Integrating Diverse Biological and Computational Sources for Reliable Protein-Protein Interactions”, in *BMC Bioinformatics*, 11 (Suppl 7):S8.
- H. Willy, F. Song, Z. Aung, S.-K. Ng, and W.-K. Sung (2010) “SLiM on DIet: Finding Short Linear Motifs on Domain Interaction Interfaces in PDB”, in *Bioinformatics*, vol 26, no. 8, pages 1036-1042.
- X. Li, M. Wu, C.-K. Kwoh, and S.-K. Ng (2010) “Computational approaches for detecting protein complexes from protein interaction networks: a survey”, in *BMC Genomics*, 11(Suppl 1):S3.
- F. Eisenhaber, C.-K. Kwoh, S.-K. Ng, W.-K. Sung, and L. Wong (2009) “Brief Overview of Bioinformatics Activities in Singapore”, in *PLoS Computational Biology*, 5(9): e1000508.
- D. Low, V. Kuralmani, S.-K. Ng, K. K. Lee, I. Ng, and B. T. Ang (2009) “Prediction of Outcome Utilizing Both Physiological and Biochemical Parameters in Severe Head Injury”, in *Journal of Neurotrauma*, Vol 26:1177-1182.
- M. Wu, X. Li, C.-K. Kwoh, and S.-K. Ng (2009) “A Core-Attachment based Method to Detect Protein Complexes in PPI Networks”, in *BMC Bioinformatics*, Vol 10:169.
- H.N. Chua, W. Hugo, G. Liu, X. Li, L. Wong, and S.-K. Ng (2009) “A probabilistic graph-theoretic approach to integrate multiple predictions for the protein-protein subnetwork prediction challenge”, in *Annals of the New York Academy of Sciences*, Vol 1158:224-33.
- S. Tang, Z. Zhang, G. Kavitha, E.-K. Tan, and S.-K. Ng (2009) “MDPD: an integrated genetic information resource for Parkinson's disease”, in *Nucleic Acids Research*, Vol 37(Database issue):D858-62.
- X. Li, J.-X. Li, B. Veeravalli, and S.-K. Ng (2008) “Inferring Transcription Factor Interactions Using a Novel HV-SVM Classifier”, in *International Journal of Computational Biology and Drug Design*, Vol 1, No 1, pp. 59-73.
- Z. Aung, S.-H. Tan, S.-K. Ng and K. L. Tan (2008) "Uncovering the Structural Basis of Protein Interactions with Efficient Clustering of 3-D Interaction Interfaces", in *Journal for Bioinformatics and Computational Biology*, Vol 6, No 3, pp. 415–433.
- Vincent Y.F. Tan and S.-K. Ng (2008) “Privacy-Preserving Sharing of Horizontally-Distributed Private Data for Constructing Accurate Classifiers” in *Privacy, Security, and Trust in KDD*, F. Bonchi et al. (Eds.), LNCS 4890, pp. 116–137.

- S.-H. Tan, H. Willy, W.-K. Sung and S.-K. Ng (2006) "A Correlated Motif Approach for Finding Short Linear Motifs from Protein-Protein Interaction Data", *BMC Bioinformatics* vol 7:502.
- X. Li, Y.C. Tan, and S.-K. Ng (2006) "Systematic gene function prediction from gene expression data by using a fuzzy nearest-cluster method", *BMC Bioinformatics* vol 7 (Suppl 4): S23.
- J. Jansson, S.-K. Ng, W.-K. Sung, H. Willy (2006) "A Faster and More Space-Efficient Algorithm for Inferring Arc-Annotations of RNA Sequences through Alignment", *Algorithmica* vol 46, no 2, pages 223-245.
- S.-K. Ng, S.-H. Tan (2006) "Challenges in Biological Literature Mining for Online Discovery of Molecular Interaction Pathways", in *International Journal of Computer Applications in Technology (IJCAT)*, vol 27, No 4, pages 259-269.
- X.-L. Li, S.-H. Tan, and S.-K. Ng (2006) "Improving Domain-Based Protein Interaction Prediction Using Biologically-Significant Negative Dataset", *International Journal of Data Mining and Bioinformatics (IJDMB)* vol 1, no. 2, pages 138-149.
- J. Chen, W. Hsu, M.L. Lee, and S.-K. Ng (2006) "Increasing Confidence of Protein Interactomes using Network Topological Metrics", *Bioinformatics* vol 22, no 16, pages 1998-2004.
- J.J. Kim, Z. Zhang, J.C. Park, and S.-K. Ng (2006) "BioContrasts: Extracting and Exploiting Protein-Protein Contrastive Relations from Biomedical Literature", *Bioinformatics* vol 22, no 5, pages 597-605.
- J. Chen, W. Hsu, M.L. Lee, and S.-K. Ng (2005) "Discovering Reliable Protein Interactions from High-Throughput Experimental Data using Network Topology", *Artificial Intelligence in Medicine (AIM)*, vol 35, pages 37-47.
- S.-H. Tan, Z. Zhang, S.-K. Ng (2004) "ADVISE: Automated Detection and Validation of Interaction by Co-Evolution", *Nucleic Acids Research*, vol 32, W69-W72.
- Z. Zhang, S.-K. Ng (2004) "InterWeaver: Interaction Reports for Discovering Potential Protein Interaction Partners with Online Evidence", *Nucleic Acids Research*, vol 32, W73-W74.
- S.-K. Ng, L. Wong (2004) "Accomplishments and Challenges in Bioinformatics", *IEEE IT Professional*, vol 6, no. 1, pages 44-50.
- S.-K. Ng, S.-H. Tan (2004) "Discovering Protein-Protein Interactions", *Journal for Bioinformatics and Computational Biology*, vol 1, no. 4, pages 711-741.
- S.-K. Ng, Z. Zhuo, S.-H. Tan, (2003) "Integrative Approach for Computationally Inferring Protein Domain Interactions", *Bioinformatics*, vol 19, no. 8, pages 923-929.

- S.-K. Ng, Z. Zhuo, S.-H. Tan, K. Lin, (2003) “InterDom: a database of putative interacting protein domains for validating predicted protein interactions and complexes”, *Nucleic Acids Research*, vol 31, no. 1, pages 251-254.
- A. Caprara, G. Lancia, S.-K. Ng, (2001). "Sorting Permutations by Reversals through Branch-and-Price", *INFORMS Journal on Computing* vol 13, pages 224-244.
- A. Caprara, G. Lancia, S.-K. Ng, (1999). "A Column-Generation Based Branch-and-Bound Algorithm for Sorting by Reversals", in M. Farach-Colton, F.S. Roberts, M. Vingron, M. Waterman (eds.) *Mathematical Support for Molecular Biology*, DIMACS Series in Discrete Mathematics and Theoretical Computer Science 47, AMS Press, pages 213-226.
- S.-K. Ng, Mukhopadhyay, N., Rayman, J., Ghosh, S., and Perlin, M, (1996). “Fully Automated Microsatellite Genotyping: Computer Software and Analysis Results”, *American Journal of Human Genetics*, 59(4):A229.
- M. Perlin, G. Lancia and S.-K. Ng, (1995). “Toward Fully Automated Genotyping: Genotyping Microsatellite Markers by Deconvolution”, *American Journal of Human Genetics*, 57(5), pages 1199-1210.

### **Conference Papers (72)**

- A. T. Luu, Y. Tay, S. C. Hui, and S.-K. Ng (2016). “Learning Term Embeddings for Taxonomic Relation Identification Using Dynamic Weighting Neural Network”, accepted by *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Austin, Texas, USA, 2-4 November, 2016.
- L. Yu, W. Wu, G. Li, W. S. Ng, S.-K. Ng, X. Li, Z. Huang, A. Anunan, H. M. Watt (2015). “iVizTRANS: Interactive Visual Learning for Home and Work Place Detection from Massive Public Transportation Data”, in Proceedings of the *IEEE Visual Analytics Science and Technology (VAST)*, Chicago, Illinois, USA, 25-30 October, 2015.
- A. T. Luu, J.-J. Kim, and S.-K. Ng (2015). “Incorporating Trustiness and Collective Synonym/Contrastive Evidence into Taxonomy Construction”, in Proceedings of the *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pages 1013–1022, Lisbon, Portugal, 17-21 September, 2015.
- S.-K. Ng, W.S. Ng, and Paul M. C. Lim (2014) “A\*DAX: Data Analytics Platform for Smart Cities”, *Smart City Expo World Congress*, Barcelona, Spain, 18-20 November, 2014.
- A. T. Luu, J.-J. Kim, and S.-K. Ng (2014) “Taxonomy Construction Using Syntactic Contextual Evidence”, in Proceedings of the *Conference on Empirical Methods on Natural Language Processing (EMNLP)*, pp. 810-819, Doha, Qatar, 25-29 October, 2014.
- L. Yu, Joanne C. P. Yee, W. S. Ng, Paul M. C. Lim, and S.-K. Ng (2014) “SINGAPORE-IN-MOTION: More Data Lead to Better Understanding”, *21<sup>st</sup> ITS World Congress*, Detroit, USA, 7-11 September 2014.



- Paul M. C. Lim, S.-K. Ng, W. S. Ng, H. Wu and Alan M. H. Quek (2014) “A\*DAX for Transport Data Management, Sharing and Analytics”, *21<sup>st</sup> ITS World Congress*, Detroit, USA, 7-11 September 2014.
- N. Amudha, G. G. Chua, Eric S. K. Foo, S. T. Goh, S. Guo, Paul M. C. Lim, M. T. Mak, M. C. M. Munshi, S.-K. Ng, W. S. Ng, H. Wu (2014) “A\*DAX: A Platform for Cross-domain Data Linking, Sharing and Analytics”, in Proceedings of the *19th International Conference on Database Systems for Advanced Applications (DASFAA)*, Bali, Indonesia, 21-24 April 2014.
- K. Rajasekharan, A. P. Mathur, and S.-K. Ng (2013) “Effective Crowdsourcing for Software Feature Ideation in Online Co-Creation Forums”, in Proceedings of the *25th International Conference on Software Engineering and Knowledge Engineering (SEKE)*, Boston, USA, 27-29 June 2013.
- W.S. Ng, S.-K. Ng, W. Wu (2012) “PlugCloud – Scaling by Plugging a Personal Cloud Infrastructure”, in Proceedings of the *IEEE International Workshop on Scalable Computing for Big Data Analytics (SC-BDA)*, Singapore, December 17-19, 2012.
- G. Liu, A. Suchitra, H. Zhang, M. Feng, S.-K. Ng, and L. Wong (2012) “AssocExplorer: An Association Rule Visualization System for Exploratory Data Analysis”, in Proceedings of the *18<sup>th</sup> ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2012)*, pp. 1536-1539 (Demonstration Track), Beijing, China, August 12-16, 2012.
- E. Y. Cheu, K. Sim, S.-K. Ng and H. C. Quek (2012) “Fuzzy Associative Learning of Feature Dependency for Time Series Forecasting”, in Proceedings of the *International Joint Conference on Neural Networks (IJCNN 2012)*, pp 1-7, Brisbane, Australia, June 10-15, 2012.
- M. N. Nguyen, X.-L. Li and S.-K. Ng (2012) “Ensemble Based Positive Unlabeled Learning for Time Series Classification”, in Proceedings of the *17th International Conference on Database Systems for Advance Applications (DASFAA 2012)*, pp 243-257, Busan, Korea, April 15-18, 2012.
- H. Cao, X.-L. Li, Y.-K. Woon and S.-K. Ng (2011) “SPO: Structure Preserving Oversampling for Imbalanced Time Series Classification”, in Proceedings of the *IEEE International Conference on Data Mining (ICDM 2011)*, pp 1008-1013, Vancouver, Canada, December 11-14, 2011.
- Y. Fang, M. Ashrafi and S.-K. Ng (2011) “Privacy beyond Single Sensitive Attribute”, in Proceedings of the *22<sup>nd</sup> International Conference on Database and Expert Systems Applications (DEXA '11)*, pp187-201, Toulouse, France, August 29-September 2, 2011.
- W. Wei, C. Gao, X.-L. Li, S.-K. Ng and G. Li (2011) “Integrating Community Question and Answer Archives”, in Proceedings of the *25<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI-11)*, pp1255-1260, San Francisco, USA, August 7-11, 2011.
- M.N. Nguyen, X.-L. Li, and S.-K. Ng (2011) “Positive Unlabeled Learning for Time Series Classification”, in Proceedings of the *22<sup>nd</sup> International Joint Conference on Artificial*

- Intelligence (IJCAI 2011)*, pp1421-1426, Barcelona, Spain, July 16-22, 2011.
- E. Y. Cheu, H. C. Quek and S.-K. Ng (2011) “Evolving Ensemble of Fuzzy Models”, in *Proceedings of the 20<sup>th</sup> IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2011)*, pp2668 – 2675, Taipei, Taiwan, June 27-30, 2011.
  - X.-L. Li, A. Tan, P.S. Yu, and S.-K. Ng (2011) “ECODE: Event-Based Community Detection from Social Networks”, in *Proceedings of the 16th International Conference on Database Systems for Advance Applications (DASFAA 2011)*, pp22-37, Hong Kong, April 22-25, 2011. **Best Paper Runner-Up Award for DASFAA 2011.**
  - G. Liu, M. Feng, Y. Wang, L. Wong, S.-K. Ng, T. L. Mah, E. Lee (2011) “Toward Exploratory Hypothesis Testing and Analysis”, in *Proceedings of the IEEE International Conference on Data Engineering (ICDE 2011)*, pp745-756, Hannover, Germany, April 11-16, 2011.
  - X.L. Li, B. Liu and S.-K. Ng (2010) “Negative Training Data Can Be Harmful to Text Classification”, in *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP 2010)*, pp218-228, Massachusetts, USA, October 9-11, 2010.
  - E. Y. Cheu, H. C. Quek and S.-K. Ng (2010) “Time Series Forecasting With Appetitive Reward-based Pseudo-Outer-Product Fuzzy Neural Network”, in *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN 2010)*, pp4015-4022, Barcelona, Spain, July 18-23, 2010.
  - X. L. Li, L. Zhang, B. Liu and S.-K. Ng (2010) “Distributional Similarity vs. PU Learning for Entity Set Expansion”, in *Proceedings of the 48<sup>th</sup> Annual Meeting of the Association for Computational Linguistics (ACL 2010)*, pp359-364, Uppsala, Sweden, July 11–16, 2010.
  - Z. Aung and S.-K. Ng (2010) “An Indexing Scheme for Fast and Accurate Chemical Fingerprint Database Searching”, in *Proceedings of the 22<sup>nd</sup> International Conference on Scientific and Statistical Database Management (SSDBM 2010)*, pp288-305, Heidelberg, Germany, June 30 – July 2, 2010.
  - C. Sheng, W. Hsu, M. L. Lee, J. C. Tong, and S.-K. Ng (2010) “Mining Mutation Chains in Biological Sequences”, in *Proceedings of the 26<sup>th</sup> IEEE International Conference on Data Engineering (ICDE 2010)*, pp473-484, Long Beach, California, USA, March 1-6, 2010.
  - K. Sim, V. Gopalkrishnan, H. N. Chua, and S.-K. Ng (2009) “MACs: Multi-Attribute Co-Clusters with High Correlation Information”, in *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD 2009)*, pp398-413, Bled, Slovenia, September 7-11, 2009.
  - S. D. Teddy and S.-K. Ng (2009) “KCMAC-TSK: A Fuzzy Cerebellar Model with Localized TSK Learning for Non-Linear System Identification”, in *Proceedings of the 18<sup>th</sup> IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2009)*, pp1633-1638, Jeju Island, Korea, August 20-24, 2009.

- E. Y. Cheu, S.-K. Ng, and H. C. Quek (2009) “A Hypothalamic and Piagetian Fuzzy Inference System: HtPFIS”, in Proceedings of the 18<sup>th</sup> IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2009), pp1-6, Jeju Island, Korea, August 20-24, 2009.
- M. Ashrafi and S.-K. Ng (2009) “Collusion-Resistant Anonymous Data Collection Method”, in Proceedings of the 15<sup>th</sup> ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-09), pp69-77, Paris, France, June 28 – July 1, 2009.
- E. Y. Cheu, S.-K. Ng, and H. C. Quek (2009) “An Interval Type-2 Neural Fuzzy Inference System based on Piaget's Action-Cognitive Paradigm”, in Proceedings of the IEEE Congress on Evolutionary Computation (CEC 2009), pp925-932, Trondheim, Norway, May 18-21, 2009.
- X.-L. Li, P. S. Yu, B. Liu and S.-K. Ng (2009) “Positive Unlabeled Learning for Data Stream Classification”, in Proceedings of the 2009 SIAM International Conference on Data Mining (SDM09), pp257-268, Nevada, USA, April 30-May 2, 2009.
- M. Ashrafi and S.-K. Ng (2009) “Efficient and Anonymous Online Data Collection”, in Proceedings of the 14th International Conference on Database Systems for Advance Applications (DASFAA 2009), pp471-485, Brisbane, Australia, April 21-23, 2009.
- X.-L. Li, C.-S. Foo, K.L. Tew and S.-K. Ng (2009) “Searching for Rising Stars in Bibliography Networks”, in Proceedings of the 14th International Conference on Database Systems for Advance Applications (DASFAA 2009), pp288-292, Brisbane, Australia, April 21-23, 2009.
- H. N. Chua, K.L. Tew, X.-L. Li and S.-K. Ng (2008) “A Unified Scoring Scheme for Detecting Essential Proteins in Protein Interaction Networks”, in Proceedings of the IEEE Intl Conference on Tools with Artificial Intelligence (ICTAI 2008), vol.2, pp. 66-74, Ohio, USA, November 3-5, 2008.
- E.Y. Cheu, H.C. Quek, and S.-K. Ng (2008) “TNFIS: Tree-Based Neural Fuzzy Inference System”, in Proceedings for the IEEE Intl Joint Conf on Neural Networks (IJCNN 2008), pp.398-405, Hong Kong, June 1-6, 2008.
- M. Ashrafi and S.-K. Ng (2008) “Enabling Privacy-Preserving E-Payment Processing”, in Proceedings of the 13<sup>th</sup> International Conference on Database Systems for Advance Applications (DASFAA 2008), LNCS 4947, pp. 596-603, New Delhi, India, March 19-21, 2008.
- X.-L. Li, J. Lee, B. Veeravalli, and S.-K. Ng (2007) “An HV-SVM Classifier to Infer TF-TF Interactions using Protein Domains and GO Annotations”, in Proceedings of the IEEE 7th International Symposium on Bioinformatics and Bioengineering (BIBE 2007), pp1360-1364, Boston, USA, October 14-17, 2007.
- X.-L. Li, B. Liu, and S.-K. Ng (2007) “Learning to Classify Documents with Only a Small Positive Training Set”, in Proceedings of the 18<sup>th</sup> European Conference on Machine Learning (ECML 2007), pp201-213, Warsaw, Poland, September 17-21, 2007.

- X.-L. Li, C.-S. Foo, and S.-K. Ng (2007) "Discovering Protein Complexes in Dense Reliable Neighborhoods of Protein Interaction Networks", in Proceedings of the 6<sup>th</sup> *International Conference on Computational Systems Bioinformatics (CSB 2007)*, pp157-168, San Diego, California, August 13-17, 2007.
- Z. Aung, S.-H. Tan, S.-K. Ng and K. L. Tan (2007) "Uncovering the Structural Basis of Protein Interactions with Efficient Clustering of 3-D Interaction Interfaces", in Proceedings of the 6<sup>th</sup> *International Conference on Computational Systems Bioinformatics (CSB 2007)*, pp287-297, San Diego, California, August 13-17, 2007.
- Vincent Y.F. Tan and S.-K. Ng (2007) "Privacy-Preserving Sharing of Horizontally-Distributed Private Data for Constructing Accurate Classifiers", in Proceedings of the *First ACM SIGKDD International Workshop on Privacy, Security, and Trust in KDD (PinKDD 2007)*, pp 18-27, San Jose, California, August 12-15, 2007.
- Vincent Y. F. Tan and S.-K. Ng (2007) "Generic Probability Density Function Reconstruction for Randomization in Privacy-Preserving Data Mining", in Proceedings of the 5<sup>th</sup> *International Conference on Machine Learning and Data Mining (MLDM 2007)*, Springer-Verlag LNAI 4571, pp 76-90, Leipzig, Germany, July 18-20, 2007.
- J. Chen, W. Hsu, M.L. Lee, and S.-K. Ng (2007) "Labeling Network Motifs in Protein Interactomes for Protein Function Prediction", in Proceedings of the 23<sup>rd</sup> *International Conference on Data Engineering (ICDE 2007)*, pp 546-555, Istanbul, Turkey, April 16-20, 2007.
- X.-L. Li, B. Liu, and S.-K. Ng (2007) "Learning to Identify Unexpected Instances in the Test Set", in Proceedings of the *Twentieth International Joint Conference on Artificial Intelligence (IJCAI-07)*, pp 2802-2807, Hyderabad, India, January 6-12, 2007.
- J. Chen, H.N. Chua, W. Hsu, M.L. Lee, S.-K. Ng, R. Saito, W.-K. Sung, L. Wong (2006) "Increasing Confidence of Protein-Protein Interactomes", *Genome Informatics* 17(2): 284-297. Also presented as keynote address at the *17th International Conference on Genome Informatics (GIW-2006)*, Yokohama, Japan, December 18-20, 2006.
- J. Chen, W. Hsu, M.L. Lee, and S.-K. Ng (2006) "NeMoFinder: Dissecting genome wide protein-protein interactions with repeated and unique network motifs", in Proceedings of the *Twelfth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2006)*, pp 106-115, Philadelphia, USA, August 20-23, 2006.
- Z. Zhang, M. Veronika, S.-K. Ng, and V.B. Bajic (2006) "Intelligent Extraction versus Advanced Query: Recognize Transcription Factors from Databases", in Proceedings of the *International Workshop on Pattern Recognition in Bioinformatics (PRIB 2006)*, pp 133-139, Hong Kong, August 20, 2006.
- X. Li, Y.C. Tan, and S.-K. Ng (2006) "Systematic Gene Function Prediction Using a Fuzzy Nearest-Cluster Method on Gene Expression Data" in Proceedings of the *Symposium of Computations in Bioinformatics and Bioscience*, Vol. 1, pp 171-178, Hangzhou, China, June 20-24, 2006.

- X.-L. Li, S.-H. Tan, C.-S. Foo, and S.-K. Ng (2005) “Interaction Graph Mining for Protein Complexes Using Local Clique Merging”, in *Genome Informatics*, 16(2), pages 260-269; also presented at the 16<sup>th</sup> *International Conference on Genome Informatics (GIW-2005)*, Yokohama, Japan, December 19-21, 2005. ***Best Paper Award for GIW2005.***
- X.-L. Li, S.-H. Tan, and S.-K. Ng (2005) “Exploring Cross-Function Domain Interaction Map”, in Proceedings of the 2005 *International Joint Conference of InCoB, AASBi and KSBI (BIOINFO 2005)*, Busan, Korea, September 22-24, 2005, pages 431-436.
- S.-K. Ng (2005) “Smart Bio-Laboratories of the Future”, in Proceedings of the *IEEE International Symposium on Circuits and Systems (ISCAS)*, Kobe, Japan, May 23-26, 2005, pages 4779-4782.
- W.-K. For, S.-K. Ng, X. Bao, and W.-S. Gan (2005) “Relative Proximity Estimation in a Confined Small-Scale Environment”, in *Proceedings of the 2005 International Workshop on Wireless Ad-Hoc Networks*, London, UK, May 23-26, 2005.
- X.-L. Li, S.-H. Tan, S.-K. Ng (2005) “Protein Interaction Prediction using Inferred Domain Interactions and Biologically-Significant Negative Dataset”, in Proceedings of the *International Conference on Computational Science and Its Applications (ICCSA-2005)*, Lecture Notes in Computer Science, Vol 3482, Apr 2005, Pages 318-326.
- X. Bao, S.-K. Ng, E.-H. Chua, W.-K. For (2005) "Virtual Lab Dashboard: Ubiquitous Monitoring and Control in a Smart Bio-Laboratory", in Proceedings of the *International Conference on Computational Science and Its Applications (ICCSA-2005)*, Lecture Notes in Computer Science, Vol 3481, Apr 2005, Pages 1167-1176.
- W.-K. For, X. Bao, W.-S. Gan, S.-K. Ng (2005) “Reconfigurable Context-Sensitive Bio-Bridge Middleware for Smart Bio-Laboratories”, in Proceedings of the 19<sup>th</sup> *International Conference on Advanced Information Networking and Applications (AINA2005)*, 28-30 March 2005, Vol 2, pages 561-566.
- W.-K. For, X. Bao, W.-S. Gan, S.-K. Ng (2005) “Location Awareness for On-the-Go Equipment Access in a Smart Bio-Laboratory”, in Proceedings of the 2<sup>nd</sup> *International Conference on Wireless and Optical Communications Networks (WOCN2005)*, 6-8 March 2005.
- Z. Zhuo, S. Tang, S.-K. Ng (2005) “Toward Discovering Disease-Specific Gene Networks”, in Proceedings of the 3<sup>rd</sup> *Asia-Pacific Bioinformatics Conference (APBC-2005)*, 17-21 January, Singapore, pages 161-170.
- J. Chen, W. Hsu, M.L. Lee, S.-K. Ng (2004) “Systematic Assessment of High-Throughput Experimental Data for Reliable Protein Interactions using Network Topology”, in Proceedings of the 16<sup>th</sup> *IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2004)*, November 15-17, Florida, pages 368-372.
- J. Jansson, S.-K. Ng, W.-K. Sung, H. Willy (2004) “A Faster and More Space-Efficient Algorithm for Inferring Arc-Annotations for RNA Sequences through Alignment”, in Springer-Verlag Lecture Notes in Computer Science, Vol 3240/2004, Proceedings of the 4<sup>th</sup>

- Workshop on Algorithms in Bioinformatics (WABI 2004)*, September 14-17, Bergen, Norway, pages 302-313.
- S.-H. Tan, W.-K. Sung, S.-K. Ng (2004) “An Automated Approach for Protein Interaction Motif Discovery”, in *Proceedings of the 2<sup>nd</sup> International Conference on Computer Science and Its Applications*, June 28-30, San Diego, USA, pages 224-232.
  - S.-H. Tan, W.-K. Sung, S.-K. Ng (2004) “Discovering Novel Interacting Motif Pairs from Large Protein-Protein Interaction Datasets”, in *Proceedings of IEEE Fourth Symposium on Bioinformatics and Bioengineering (BIBE2004)*, pages 568-575, May 19-21 2004.
  - S.-K. Ng, Z. Zhu, Y.S. Ong (2004). “Whole-Genome Functional Classification of Genes by Latent Semantic Analysis on Microarray Data”, in *Proceedings of the 2<sup>nd</sup> Asia-Pacific Bioinformatics Conference APBC-2004*, pages 123-129, New Zealand, January 2004.
  - H. Li, J. Li, S.-H. Tan, S.-K. Ng (2004) “Binding Motif Pair Discovery from Protein Complex Structural Data and Protein Interaction Sequence Data”, in *Proceedings of the 9th Pacific Symposium for Biocomputing PSB-2004*, pages 312-323, January 2004.
  - S.-K. Ng, S.-H. Tan, V.S. Sundarajan (2003) “On Combining Multiple Microarray Studies for Improved Functional Classification by Whole-Dataset Feature Selection”, in *Genome Informatics 14*, pages 44-53; also presented at *the 14<sup>th</sup> International Conference on Genome Informatics (GIW 2003)*, December 14-17, 2003.
  - J. Li, H. Liu, S.-K. Ng, L. Wong (2003) “Discover Significant Rules for Classifying Cancer Diagnosis Data”, in *Bioinformatics, Vol 19, suppl. 2*, pages ii93-ii102, also presented at *European Conference for Computational Biology ECCB 2003*, September 27-30, 2003.
  - S.-K. Ng, Z. Zhuo, S.-H. Tan, (2003) “Integrative Approach for Computationally Inferring Protein Domain Interactions”, in *Proceedings of the 18<sup>th</sup> ACM Symposium for Applied Computing (SAC2003)*, pages 115-121, March 2003.
  - V. Bajic, V. Brusica, J. Li, S.-K. Ng, L. Wong (2003) “From Informatics to Bioinformatics”, in *Proceedings of the 1<sup>st</sup> Asia Pacific Bioinformatics Conference*, pages 3-14 (invited keynote, primary author L. Wong).
  - J. Li, S.-K. Ng, L. Wong, (2003) "Bioinformatics adventures in database research", in *Proc. 9th Int. Conf. on Database Theory (ICDT2003)*, pages 31-46, Siena, Italy, January 2003. (invited keynote, primary author L. Wong)
  - A. Caprara, G. Lancia, S.-K. Ng, (2000). "Fast Practical Solution of Sorting by Reversals", in *Proceedings of the 11<sup>th</sup> Annual ACM-SIAM Symposium on Discrete Algorithms (SODA'00)*, ACM Press, pages 12-21.
  - S.-K. Ng and M. Wong, (1999). “Toward Routine Automatic Pathway Discovery from On-Line Scientific Text Abstracts”, in *Genome Informatics* vol 10, pages 104-112; also presented at *the 10<sup>th</sup> International Conference on Genome Informatics (GIW 1999)*, December 14-15, 1999.

- S.-K. Ng and A.-T. Aw, (1992). “CATS – A Domain-specific Statistical Text-extraction System”, in *Proceedings of 1<sup>st</sup> International Conference on Intelligent Systems (SPICIS)*, pages 122-128.
- S.-K. Ng and M. Tomita, (1991). “Probabilistic LR Parsing for General Context-free Grammars”, in *Proceedings of 2<sup>nd</sup> International Workshop on Parsing Technologies by SIGPARSE ACL*, pages 154-163.

### **Patents (2)**

- S.-K. Ng and L. Wong. “A Protein Interaction Extraction System”, Singapore Patent No. 200203424-7, granted on 30 June 2008.
- M. Ashrafi and S.-K. Ng. “A Method and System for Sharing Data”, WO Patent, WO/2009/145,734.

### **Postgraduate Students Graduated**

- Karthikeyan Rajasekharan, Masters of Engineering (2013), “Collaborating with Customers in Software Product Feature Ideation”, Information Systems Technology and Design, Singapore University of Technology and Design. 2012-2013. Co-supervised with Prof. Aditya Mathur.
- Hugo Willy, PhD (2011), "Biological sequence motif discovery", School of Computing, National University of Singapore. 2003-2011. Co-supervised with Assoc. Prof. Wing-Kin Sung.
- Eng Yeow Cheu, PhD (2011), “Biologically Inspired Neural Fuzzy Computational Models”, School of Computer Engineering, Nanyang Technological University. 2006-11. Co-supervised with Assoc. Prof. Quek Hiok Chai.
- Chen Jin, PhD (2007), "Systematic Assessment of Protein Interaction Data using Graph Topological Approaches", School of Computing, National University of Singapore. 2003-2007. Co-supervised with Assoc. Prof. Wynne Hsu and Assoc. Prof. Lee Mong Li.
- Soon-Heng Tan, Masters of Science (2006), "Automated Linear Motif Discovery from Protein Interaction Network", School of Computing, National University of Singapore. 2003-2006. Co-supervised with Asst. Prof. Wing-Kin Sung (NUS).
- For Wei Khing, Masters of Engineering (2005), “Enabling Location Awareness with Automatic-Reprogrammable Context-Sensitive Bio-Bridge Middleware for Smart Bio-Laboratories”, School of Electrical and Electronic Engineering, Nanyang Technological University of Singapore. 2003-2005. Co-supervised with Assoc. Prof. Gan Woon Seng (NTU).
- Feng Yuan, Masters of Science (2005), "An Intelligent Engine for User-Oriented Web Service Selection", School of Computing, National University of Singapore. 2002-2005. Co-supervised with Assoc. Prof. Pung Hung Keng (NUS).

### **Postgraduate Thesis Examination Committees**

- “Computational Studies of Host-Pathogen Protein-Protein Interactions “, Zhou Hufeng, PhD dissertation, School of Computing, National University of Singapore, 2013.
- “Understanding the Hormonal Regulation of Mouse Lactogenesis by Transcriptomics and Literature Analysis”, Maurice Ling, Ph.D. dissertation, University of Melbourne, Australia, 2009.

- “Graph-based Methods for Protein Function Prediction”, Chua Hon Nian, Ph.D. dissertation, School of Computing, National University of Singapore, 2007.
- “Interpretation of Natural Language Query for Heterogeneous Databases : Applications to Biomedical Domains”, Hodong Lee, PhD proposal, November 2006 and oral defense, May 2008, KAIST, South Korea, 2006-2008.
- "Biomedical name recognition: A machine learning approach", Zhang Jie, Masters thesis, School of Computing, National University of Singapore, January 2004.
- "Local Parsing for Information Extraction: Applications to Biological Interactions”, Jung-Jae Kim, PhD (2006), KAIST, South Korea, 2004-2006.
- “Efficient Discovery of Binding Motif Pairs from Protein Interaction Data”, Li Haiquan, School of Computing, National University of Singapore, August 2004 (proposal).

### **Other Auxiliary Duties**

- Invited judging panelist for the MIT TR35 Asia (2014, 2017-8)
- Invited judging panelist for 'Smart' Cool Ideas for Better HDB Living (University Level) Design Competition (2016)
- Invited reviewer for the Singapore’s Land and Liveability National Innovation Challenge (L2 NIC) R&D Roadmap (2014)
- Member of the pre-selection panel for the Singapore Challenge for Young Scientists Summit@one-north (GYSS@one-north) (2014)
- Invited judging panelist for the Singapore National Academy of Science Young Scientist Award (2010, 2012)
- Member of selection panel for the Singapore Computer Society IT Youth Award (2011)
- Invited judging panelist for the Tan Kah Kee Young Inventors' Award (2009)
- Invited judging panelist for the National Science Talent Search of Singapore (2005-2006)
- Member of Interviewing Panel for A\*STAR’s National Science Scholarships (2003-present)
- Mentor for Singapore’s Agency for Science and Technology (A\*STAR)’s National Science Scholars (2002-present)
- Chairman of KRDL’s Social committee (2000-2002)  
Responsible for the organizational development of the institute in terms of the well-being and social interactions of all employees, particularly during merger periods.