Curriculum Vitae OF TENG TECK HOU

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CAREER OBJECTIVES

To advance the use of machine learning techniques in robotic systems for allowing it to operate autonomously in complex and unmodified environment

EDUCATION

08/2006 – 02/2013: Nanyang Technological University, Singapore
Doctor of Philosophy (Degree conferred on 7th Feb 2013**)**
Thesis Topic: Cognitive Information Systems for Context-Aware Decision Support
CGPA: 3.92
Impact (Google Scholar) - Citation: 111, h-index: 4, i10-index: 2

Publications - Journal Articles: 4, Conference Papers: 8

Collaboration

[1] 08/2010 – 11/2011: Collaborated with DSO, TL@NUS and CAE to investigate the use of machine learning technique for knowledge discovery using CAE Strike CGF® simulation platform

[2] 02/11/2011 – 11/11/2011: Demonstrated the machine learning technique to CAE at Montreal, Canada involving CAE Test Pilots engaging in simulated dogfights with the AI-driven agent

Talk/Seminar

[1] Technical sharing on Adaptive CGF Technology, CAE™ Inc., Montreal Canada, 9th November 2011

[2] Self-Organizing Neural Networks for Learning Air Combat Maneuvers, ER-LAB @ NTU, Singapore, 5th June 2012

Teaching/Supervisory Experience

[1] Jul 2007 – Oct 2007, Jul 2010 – Oct 2010: Supervision of laboratory sessions

Peer-review Experience

[1] **Conference**: AAMAS, Fusion, IAT, ICDM, IEA-AIE, IRI, ISNN, IWACI, ICONIP

[2] **Journal**: Applied Intelligence, JAISE, SMC-A, TNN, IEEE-Cybernetics, Applied Soft Computing, TKDE, TNN-LS

Committee Membership

[1] **Program Committee**: AmI 2013, AmI 2014, BIH 2014

[2] **Technical Committee**: Pattern Analysis and Machine Intelligence

[3] **Task Force**: ADP in Game Theory and Multi-Agent Optimization, Real-Time Strategy Games

Research Interests

[1] Reinforcement Learning: adaptive resonance theory, perceptual aliasing, design of reward function, exploration and exploitation strategies

[2] Behavior Modeling: use of state machine architecture for modeling complex behaviors

[3] Application domains: Zero-sum Markov Decision Processes, Machine learning on problem domains with complex knowledge structure, Modeling and forecasting of complex phenomenon

2000 – 2003: Nanyang Technological University, Singapore
Bachelor of Engineering (Computer Engineering)
Honor: 2nd Class (Upper Division)

Final Year Project (Awarded 'A' grade): Identification and tracking of dim moving targets in FLIR imagery using artificial neural networks

[1] **Teck-Hou Teng**, Patra J. C. and Ee-Luang Ang, Identification and tracking of dim moving targets in FLIR using artificial neural networks, In proceedings, Seventh International Symposium on Signal Processing and Its Application(ISSPA), 223-226, Vol. 2, Paris, 1-4 July 2003

1995 – 1998: Singapore Polytechnic
Diploma with Merit in Electronics, Computer and Communication
Major: Telecommunication
Final Year Project: Mobile Robotics (sensory circuit and exploration algorithms)

1991 – 1994: Mayflower Secondary School
GCE 'O' Level: Scored 4 distinctions out of 8 subjects

WORK EXPERIENCE

SIM University (UniSIM), School of Business, Business Analytics Programme
Instructor (01/2014 – present)

- ANL303e Fundamentals of Data Mining (01/2014 – present)

Nanyang Technological University, School of Computer Engineering, Center for Computational Intelligence
Project Officer (02/2012 – 03/2013), Research Fellow (04/2013 – Present)

- Develops AI Engine used on a Multi-Player Computer Game *Starcraft Broodwar* for a DSO-funded project
- Coordinates multi-agent reinforcement learning for a learning problem with multiple tasks and goals
- Uses self-organizing neural network to discover effective rules incrementally in real time
- Suitable for problems involving multiple goals with task dependencies and resource competition

Temasek Laboratories @ NTU, Modeling & Simulation Systems Laboratory of
Project Officer (03/02/2004 – 01/08/2006)

- Developed AI Engine for a DSTA-funded Urban Warfare Simulator.
- Knowledgeable in research topics such Cognitive Architecture, FSM, Motion Control, Synthetic Vision, Path Planning, MADM, Evidential Reasoning, Fuzzy Logic, Genetic Algorithms, Neural Networks.

Sembawang Airbase, Air Logistic Squadron, Air Weapons Flight
Technician (01/02/99 - 30/06 /00 & 01/07/2003 - 27/01/2004)

- Specialized in various armament systems (GPMGs and Gun Pod) for helicopters.
- Worked within a stringent set of engineering protocols.

INRIA Rhoné Alpes, Grenoble, France
Trainee, 07 January 2002 – 22 June 2002

- Involved in the development of a simulator for the electric vehicle, the Cycab.
- Worked on the Automatic Controller Development program called the ORCCAD.

SMP Electronics Pte. Ltd., Singapore
Technical Support, July 1998 – October 1998

- Involved in configuring HP Palmtops for use by AIA Insurance Agents.
- Completed a few freelance projects which involved building several test board for Alcatel's line of handphones.

University of Salford, Salford, Manchester
Research Student, 12 May 1997 – 30 June1997

- Involved in the electrical and mechanical design of a **dexterous robotic hand** for the robotic research laboratory of the Acoustic and Electronics Department.

ACTIVITIES AND HONOURS

Overseas Industrial Attachment

- Completed a virtual navigation platform for an autonomous robot, the Cycab, in a virtual environment while with INRIA Rhoné Alpes, France under the supervisor of **Daniel Simon**.
- Awarded an **'A' grade** for my contributions in the Industrial Attachment Programme (NTU) to **INRIA Rhoné Alpes**.

Book Prizes and Awards

- Awarded **Mentor Graphics Prize** for meritorious academic performance in my second year in Singapore Polytechnic.
- Awarded **ILOG Prize** for meritorious academic performance in my final year in Singapore Polytechnic.
- Awarded **Nanyang Award - Teamwork** for participation in Run Round Singapore 2010
- Awarded **Nanyang Alumni Service Award** for recognition of effort towards NTU Endowment

Fund Raising activities

- Awarded **SAF Good Service Medal (5 years)** for commitment and dedication to routine In-Camp Training

Competitions

- Competed in the **Obstacle Avoidance Robot** in Singapore Robotics Games 1998 using the Final Year Project in Singapore Polytechnic (1995 –1998).

Exhibitions

- 3G SAF TechX Exhibition at Suntec Convention and Exhibition Centre, Level 2, Ballroom 1 – 3 from 11 – 12 November 2004.

SKILLS

Technical Skills

- Operating System: Windows (XP, Vista, 7), Ubuntu (linux)
- Programming Language: C++, Java and Matlab
- Scripting Language: Luaplus, XML, HTML
- Documentation: Latex, UML, Microsoft Office (Excel, Word, Powerpoint, Visio), Techsmith Snagit (screen capture and video editing)
- Development & Simulation Software: Visual Studio C++, Eclipse IDE, CAE Strike™ CGF, SPSS Modeler (version 14.1)

Foreign Language

- Participated in **3 years of French Language course** in Singapore Polytechnics.
- Completed French Language course in **Centre Universitaire d'Etudes Franaises** (CUEF), Université Stendhal, Grenoble, France.

Referees

Dr. Ah-Hwee Tan
Associate Professor
School of Computer Engineering,
Nanyang Technological University

Dr. Janusz A. Starzyk
Professor
School of Electrical Engineering and Computer Science,
Ohio University

Mr. Wee-Sze Ong
Programme Manager
Information Division,
DSO National Laboratories

List of Publications

[1] **Teck-Hou, Teng**, Ah-Hwee Tan, Jacek M. Zurada, Self-Organizing Neural Networks Integrating Domain Knowledge and Reinforcement Learning, IEEE Transactions on Neural Networks and Learning Systems, DOI 10.1109/TNNLS/2014.2327636, 2014

[2] **Teck-Hou, Teng**, Ah-Hwee Tan and Loo-Nin Teow, *Adaptive Computer-Generated Forces For Simulator-based Training. Expert Systems with Application*, Vol. 40, No. 18, pp. 7341-7353, December 2013

[3] Yu-Hong Feng, **Teck-Hou, Teng** and Ah-Hwee Tan, *Modeling Situation Awareness for Context-Aware Decision Support, Expert Systems with Application*, Vol. 36, No. 1, pp. 455-463, January 2009

[4] **Teck-Hou Teng**, Jagdish C. Patra and Ee-Luang Ang. *Identification and Tracking of Dim Moving Targets in FLIR Imagery using Artificial Neural Networks*. In Proceedings of the 7th International Symposium on Signal Processing and its Applications, Vol. 2 pp. 223-226, Paris, July 2003

[5] **Teck-Hou Teng** and Ah-Hwee Tan, *Cognitive Agents Integrating Rules and Reinforcement Learning for Context-Aware Decision Support*, In proceedings of the IEEE/WIC/ACM International Conference on Intelligent Agent Technology, Sydney, 9-12 December 2008

[6] **Teck-Hou Teng**, Zhong-Ming Tan and Ah-Hwee Tan, *Self-Organizing Neural Models Integrating Rules and Reinforcement Learning*, In proceedings of the International Joint Conference on Neural Networks, pp. 3770-3777, Hong Kong SAR, 1-6 June 2008

[7] **Teck-Hou Teng**, Ah-Hwee Tan, Yuan-Sin Tan and Adrian Yeo. *Self-Organizing Neural Networks for Learning Air Combat Maneuvers*. In Proceedings of the International Joint Conference on Neural Networks, pp. 2859-2866, Brisbane, June 2012

[8] **Teck-Hou Teng**, Ah-Hwee Tan, Wee-Sze Ong and Kien-Lip Lee. *Adaptive CGF for Pilots Training in Air Combat Simulation*. In Proceedings of the 15th International Conference on Information Fusion, pp. 2263-2270, July 2012

[9] **Teck-Hou Teng**, Ah-Hwee Tan and Yuan-Sin Tan. *Self-Regulating Action Exploration in Reinforcement Learning*. Procedia Computer Science, 13:62-74, 2012

[10] **Teck-Hou Teng** and Ah-Hwee Tan. *Knowledge-based Exploration for Reinforcement Learning in Self-Organizing Neural Networks*. In Proceedings of the International Conference on Intelligent Agent Technology, pp. 332-339, Macau SAR, Dec 2012

[11] **Teck-Hou Teng** and Ah-Hwee Tan. *Delayed Insertion and Rule Effect Moderation of Domain Knowledge for Reinforcement Learning*. In Proceedings of the IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, pp. 132-139, Singapore, April 2013

[12] **Teck-Hou Teng**, Ah-Hwee Tan, Janusz. A. Starzyk, Yuan-Sin Tan and Loo-Nin Teow. *Integrating Self-Organizing Neural Network and Motivated Learning for Coordinated Multi-Agent Reinforcement Learning in Multi-Stage Stochastic Game*. In Proceedings of the International Joint Conference on Neural Networks (IJCNN'14), pp. 4229-4236, Beijing, 2014.

[13] **Teck-Hou Teng**, Ah-Hwee Tan, Janusz. A. Starzyk, Yuan-Sin Tan and Loo-Nin Teow. *Integrating Motivated Learning and k-Winner-Take-All to coordinate Multi-Agent Reinforcement Learning*. In Proceedings of the International Conference on Intelligent Agent Technology (IAT'14), pp. 190-197, Warsaw, 2014.