Reporting of the IEEE CIS Summer School on Neuromorphic Systems for Machine Learning 2016

September 28-30, Nanyang Technological University

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URL: http:// neurosysml.weebly.com

On 28-30 September 2016, the Singaporean Chapter of IEEE Computational Intelligence Society (CIS) in collaboration with the BRAIN Systems Lab and VALENS at Nanyang Technological University organized the IEEE CIS Summer School on Neuromorphic Systems for Machine Learning 2016. The Summer School was held in Nanyang Technological University and was sponsored by IEEE CIS and IEEE Circuits and Systems (CAS) Society Distinguished Lecturer Program.

The program included 9 talks – 4 by invited speakers from overseas (Switzerland, France, Austailia and China), 2 by speakers from Singapore (Nanyang Technological University and National University of Singapore respectively), and 3 student presentations by local researchers. Among the speakers, we note the participation of Professor Shih-Chii Liu (ETH, Switzerland) as Distinguished Lecturer from the IEEE Circuits and Systems Society (IEEE CAS). Many talks featured interesting hands-on demos. The program also included a panel discussion, wherein all speakers and industry leaders voiced their opinions on "How far are neuromorphic technologies from commercial impact"

Program Schedule

	28 September 2016 (Wed)	*29 September 2016 (Thu)*	*30 September 2016 (Fri)*
10.00 am – 12.00 pm	*Andre van Schaik Event-Based and Unsupervised Feature Extraction for Neuromorphic Systems*	*IEEE CASS DL talk Shih-Chii Liu (ETH, Switzerland) Event-Based Auditory Processing with Spiking Silicon Cochleas and Deep Networks*	*Arindam Basu (Nanyang Technological University, Singapore) Designing Low-power "Intelligent" Chips in the face of Statistical Variations of Nanoscale Devices.*
	LUNCH		
1.30 pm – 3.30 pm	*Huajin Tang (Sichuan University, China) Introduction to Neuromorphic Cognitive Computing*	*Ryad Benosman (Université Pierre et Marie Curie, Paris) Neuromorphic Event-based time oriented vision: A framework to unify computational and biological vision*	*Garrick Orchard (Temasek Labs, National University of Singapore) Spike based visual processing for autonomous vehicles*
	COFFEE BREAK		

4.30 pm – 6.30 pm	Student Presentations: Rohan Ghosh: "Towards Real-time, invariant recognition algorithms for Neuromorphic Vision", Laxmi R. Iyer: "A Spiking Neural Network Model for Category Formation", Lee Wang Wei: "A neuromorphic approach to tactile perception."	Panel Discussion "How far are neuromorphic technologies from Commercial Impact?" Panelists: All speakers + David Tan, Kevin Khoo, Simon See	
	Conference Dinner		

58 participants who ranged from the industry (for e.g. ST Electronics, Huawei Research Center) and research institutions (Institute of Infocomms Research, Institute of Microelectronics, DSO National Laboratories and Institute of Microelectronics) to universities (Temasek Labs at NUS, SINAPSE, Nanyang Technological University) took part in this event. The summer school was a fertile venue to share and exchange new ideas, skills, and insight into the field of neuromorphic systems. A very unique aspect of this summer school was that it was an avenue for the interaction between academics and industry leaders and gave the participants an insight into the commercialization of their research work – this is something that is not usually discussed in an academic conference.

Photos of Andre van Schaik

Photos of Shih-Chii Liu

Photos of Ryad Benosman

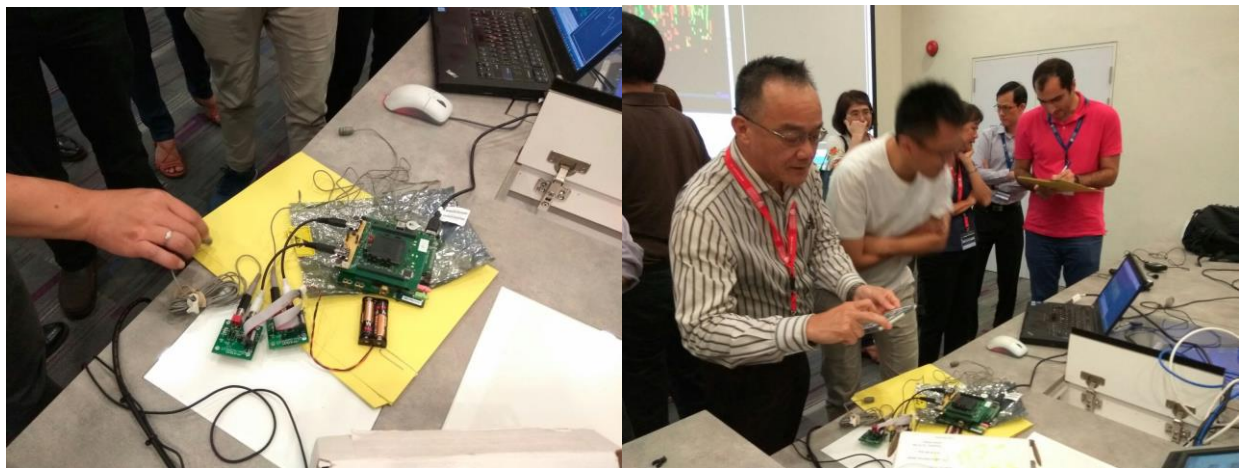# Photos of Huajin Tan

Photos of Arindam Basu
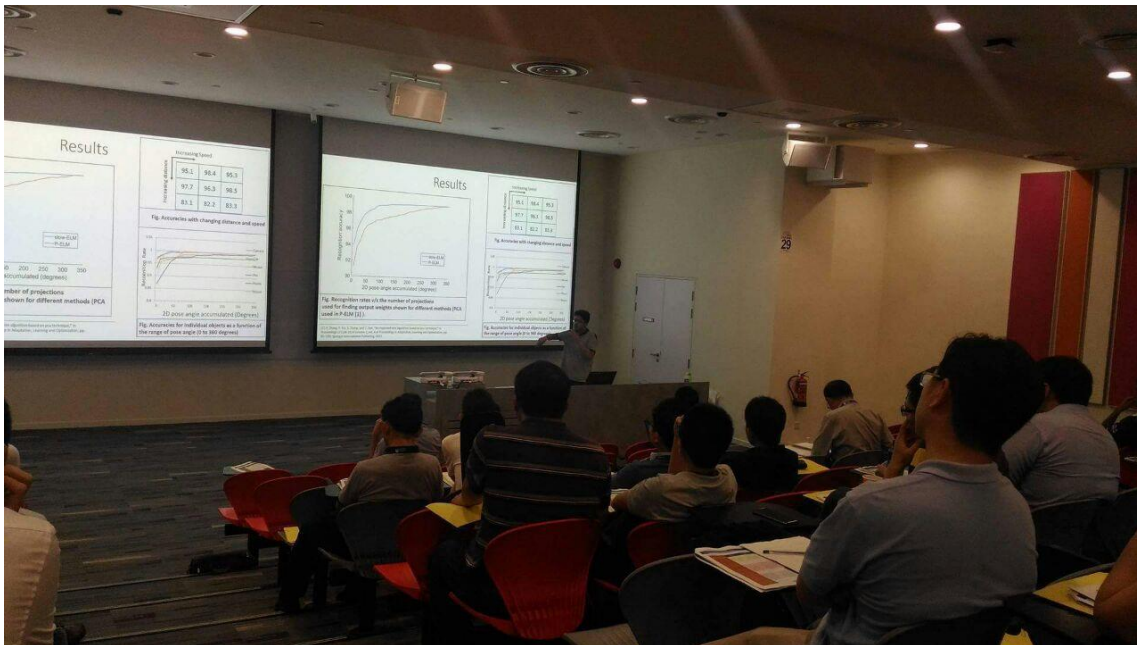

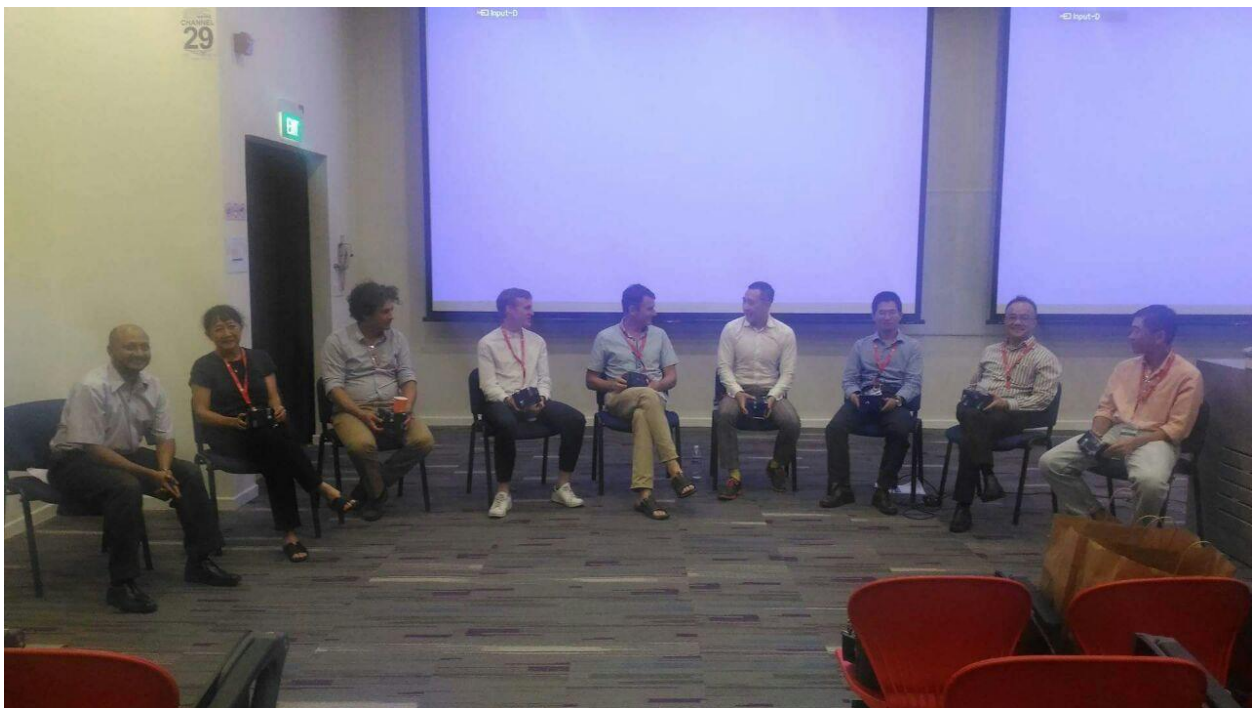*Photos of Garrick Orchard*

Photos of Demos

Photos of Student Presentations

Photos of Panel Discussion

Photos of Participants