US – JAPAN WORKSHOP
NEW-GENERATION COMPUTERS: QUANTUM ANNEALING AND COHERENT COMPUTING

- Quantum annealing and coherent Ising, XY, and Heisenberg machines
- Combinatorial optimization problems and IoT
- Semi-definite programming, simulated annealing and other heuristics
- Implementation and performance evaluation in optical, superconducting, and semiconducting devices.

December 10-11, 2015
Stanford University

Organized by
Yoshihisa Yamamoto
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PROGRAM

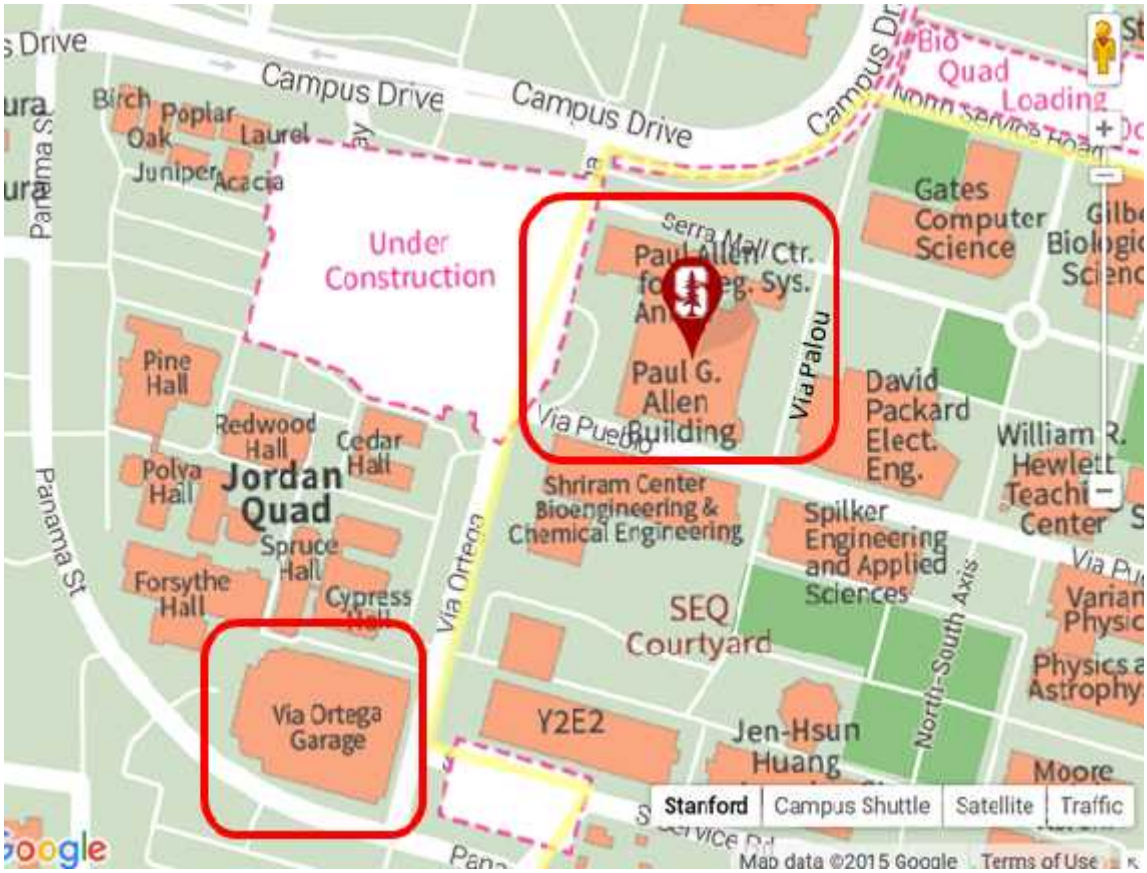
December 10 (Thu)			
8:00 - 9:00		**Registration**	
9:00 - 9:10	(10)	Welcome Remarks (Yoshihisa Yamamoto, Will Oliver)	
9:10 - 9:40	(30)	Yoshihisa Yamamoto (ImPACT Program/Cabinet Office of Japan, Stanford University)	Coherent Ising machine
9:40 - 10:20	(40)	Alireza Marandi (Stanford University)	OPO network as CIM
10:20 - 10:50			**Coffee Break**
10:50 - 11:30	(40)	Will Oliver (MIT / MIT Lincoln Laboratory)	Superconducting technologies for quantum enhanced optimization
11:30 - 12:10	(40)	Simon Gustavsson (MIT)	Capacitively shunted flux qubit
12:10 - 14:00			**Free Time**
14:00 - 14:40	(40)	Shoko Utsunomiya (National Institute of Informatics)	Laser network as coherent XY machine
14:40 - 15:20	(40)	Hiroki Takesue (NTT)	Large-scale CIM
15:20 - 15:50			**Coffee Break**
15:50 - 16:30	(40)	David Hover (MIT Lincoln Laboratory)	Josephson traveling wave parametric amplifier
16:30 - 17:10	(40)	Daniel Lidar (University of Southern California)	Error correction for quantum annealing
17:30 - 19:00		**Poster Session**	
December 11 (Fri)			
9:00 - 9:40	(40)	Matthias Troyer (ETH Zurich)	Classical, quantum, and quantum-inspired annealing
9:40 - 10:20	(40)	Eleanor Rieffel (NASA-Ames Research Center)	Programming quantum annealers, application case studies, and analyses of enhancement mechanisms
10:20 - 10:50			**Coffee Break**
10:50 - 11:30	(40)	Yuichi Katori (Future University Hakodate)	Associative memory with CIM
11:30 - 12:10	(40)	Timothee Leleu (The University of Tokyo)	Combinatorial optimization using dynamical phase transition in driven-dissipative systems
12:10 - 14:00			**Free Time**
14:00 - 14:40	(40)	Vadim Smelyanskiy (Google)	Instantons in quantum annealing: thermally assisted tunneling vs quantum Monte Carlo simulations
14:40 - 15:20	(40)	Sergio Boixo (Google)	Tunneling in physical quantum annealing
15:20 - 15:50			**Coffee Break**
15:50 - 16:30	(40)	Hidetoshi Nishimori (Tokyo Institute of Technology)	Bayesian inference of the Ising model ground state out of noisy data
16:30 - 17:10	(40)	Masanao Yamaoka (Hitachi)	A CMOS Ising computer with CMOS annealing for combinatorial optimization problems
17:10 - 17:50	(40)	Jonathan Keeling (University of St. Andrews)	Cold atom based XY machine

POSTER PRESENTATION

December 10 (Thursday) 17:30pm - 19:00pm			
	NAME	AFFILIATION	TITLE
1	Ryan Hamerly	Stanford University	Modeling domain formation in large-scale Ising machines
2	Yoshitaka Haribara	National Instituite of Informatics The University of Tokyo	A coherent Ising machine for MAX-CUT problems against simulated annealing and semi-definite programming
3	Takahiro Inagaki	NTT	Time-division-multiplexed optical parametric oscillator for large-scale coherent Ising machine
4	Peter McMahon	Stanford University	An OPO Ising machine using measurement feedback
5	Hiromasa Sakaguchi	National Instituite of Informatics The University of Tokyo	Community detection by using laser network
6	Shuhei Tamate	National Instituite of Informatics	Analog simulation of classical XY models with a mode-locked fiber laser
7	Simon Gustavsson	MIT	Quantum computation with superconducting circuits
8	David Hover	MIT Lincoln Laboratory	High-fidelity quantum informationi processing with superconducting circuits

VENUE & PARKING

CIS-X Auditorium
Paul G. Allen Building
(also known as Center for Integrated Systems (CIS))
420 Via Palou Mall
Stanford, CA 94305-4070
https://campus-map.stanford.edu/index.cfm?ID=04-050



The nearest visitor parking (Via Ortega Garage) is located at the corner of Via Ortega and Panama Street. There is no free parking on campus from 6am to 4pm. The visitor "A" permits are available at the registration desk in front of CIS-X Auditorium from 8am to 4pm on December 10 and 11. The visitor will scratch off the date and it has to be hanged from a rear-view mirror, facing out. The "A" permit is valid for one-full day for both "A" and "C" zones but not for "P"(pay) parking.

You can also purchase visitor permits at Stanford's Parking and Transportation Services office. For more information about parking, please visit the link below.
(No reimbursement will be made by Stanford University.)
http://transportation.stanford.edu/parking_info/VisitorParking.shtml

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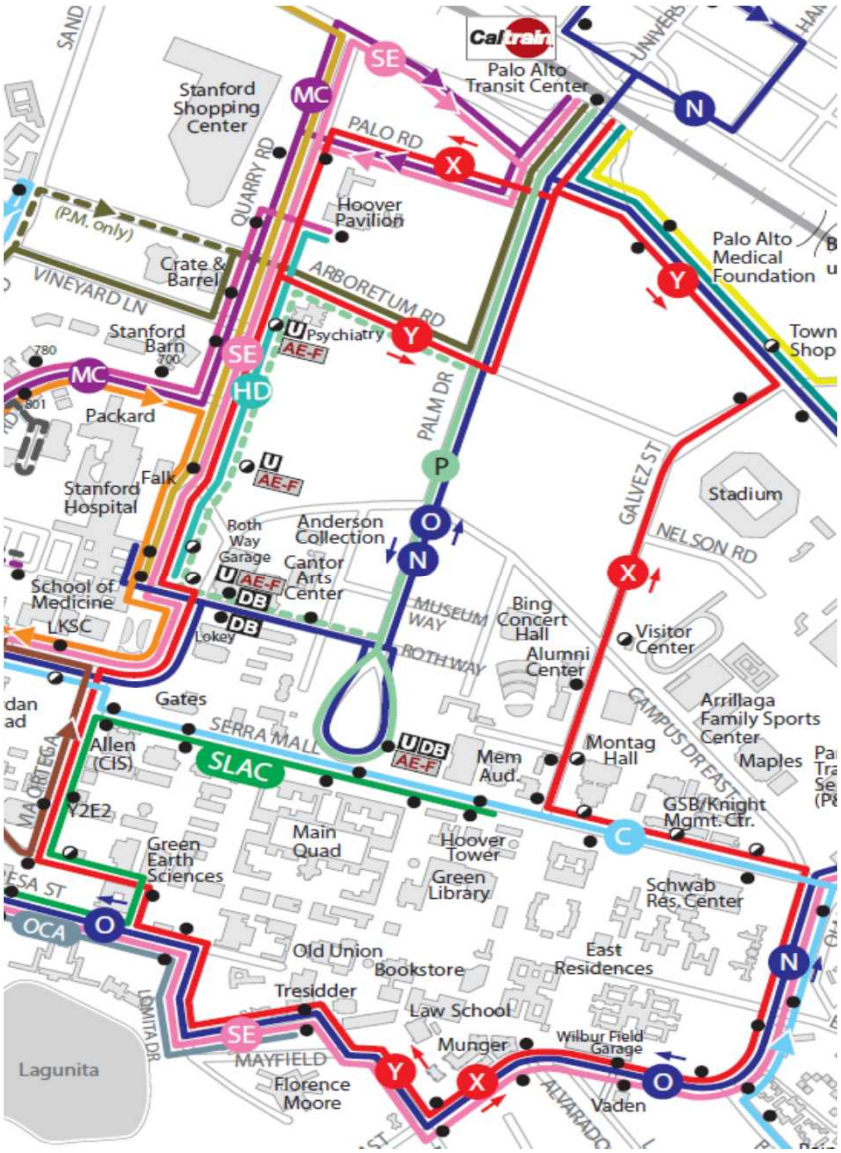
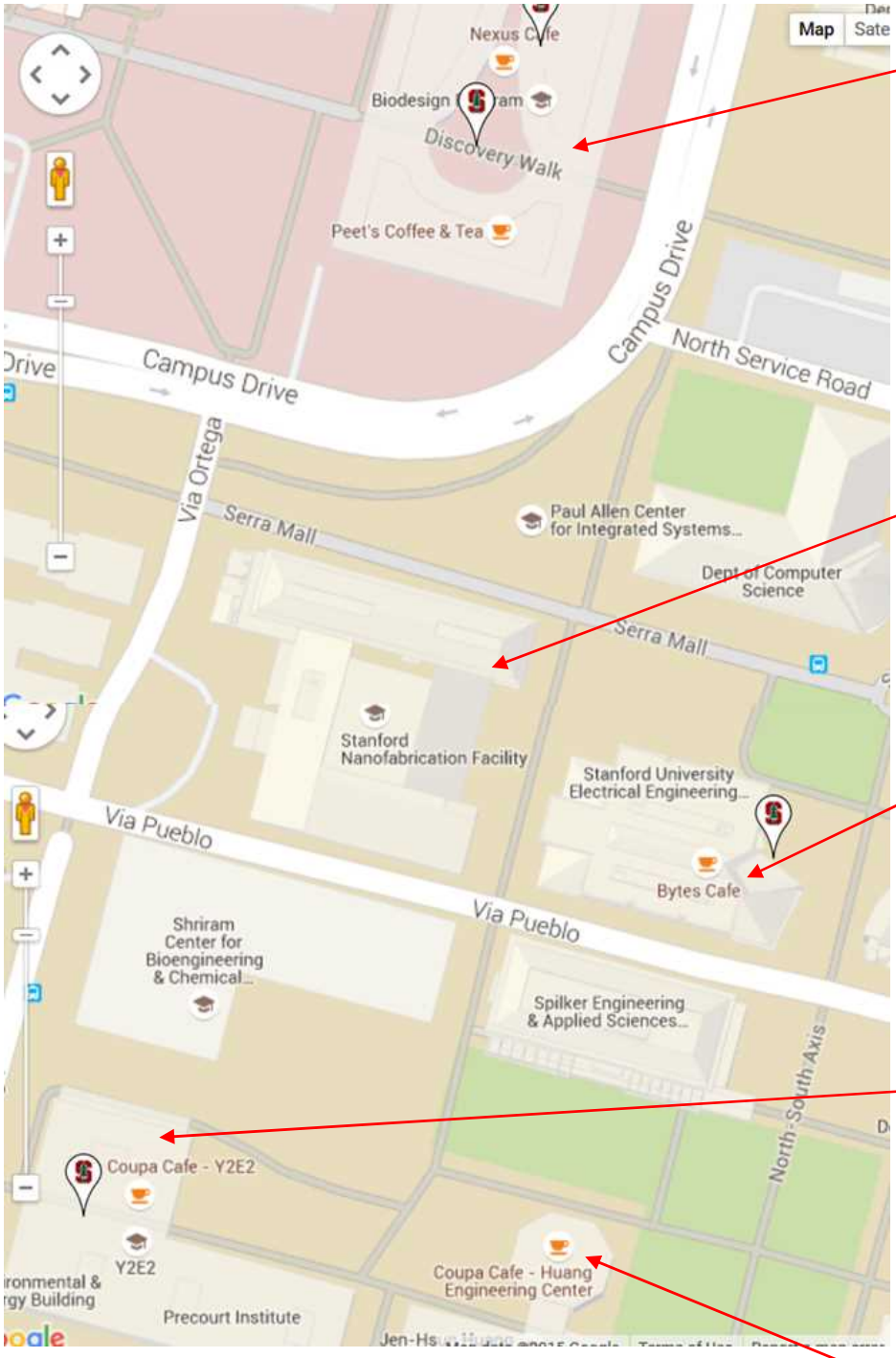
The Marguerite is Stanford's free shuttle bus service that travels around the Stanford campus and its vicinity. For details, see
http://transportation.stanford.edu/marguerite/

Line X (Counter-Clockwise) Palo Alto Transit Center (Caltrain platform) → Via Ortega @ Y2E2
http://transportation.stanford.edu/marguerite/x/
Line Y (Clockwise) Via Ortega @ Y2E2 → Palo Alto Transit Center (Caltrain platform)
http://transportation.stanford.edu/marguerite/y/



Larger map & other routes
http://transportation.stanford.edu/marguerite/schedules.php

DINING MAP



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James H. Clark Center
318 Campus Drive West

CIS-X Auditorium
Paul G. Allen Building

Bytes Cafe
350 Serra Mall

Coupa Cafe - Y2E2
473 Via Ortega

Forbes Family Cafe,
Coupa Cafe - Huang Engineering Center
475 Via Ortega

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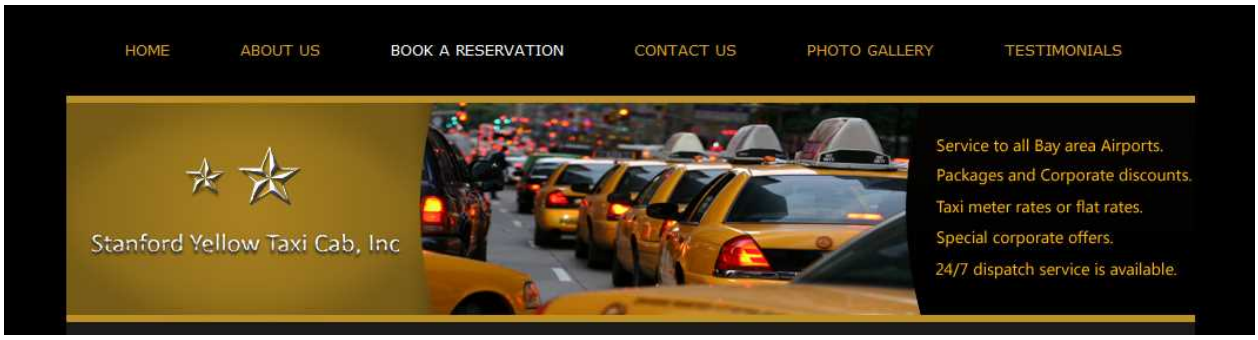

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