Research and Graduate Program

School of Computing Science
Simon Fraser University

http://www.cs.sfu.ca/gradpgm
Simon Fraser University (SFU)

- Named after explorer Simon Fraser and opened in 1965
- Three campuses:
  - Burnaby mountain campus
  - Surrey campus in Surrey, BC (new in 2004)
  - Harbor Center at downtown Vancouver
- Hosts about 700 faculty members, 3,300 graduate students, and 22,000 undergraduate students
- Consistently placed at, or near, top of Maclean's magazine’s national ranking of comprehensive universities
School of Computing Science

- 44 full-time research faculties: fifth largest among all computer science departments in Canada
- 4 to be hired this year
- 9 associate faculties from Math, Engineering Science, and Linguistics
- 10 teaching faculty members
- 185 graduate students (≈ 1/3 are Ph.D.s)
- 700+ undergraduate majors
- We are still in a phase of strong growth

Right: ASB - current home of CS
Below: New home, starting Sep., 2005
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution &amp; Degree</th>
<th>Position</th>
<th>Research Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin Ester</td>
<td>ETH (Ph.D., '90)</td>
<td>Associate Prof.</td>
<td>Databases and data mining</td>
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<tr>
<td>Uwe Glässer</td>
<td>HNI, Paderborn (Ph.D., '92)</td>
<td>Associate Prof.</td>
<td>Software engineering</td>
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<tr>
<td>Cenk Sahinalp*</td>
<td>Maryland (Ph.D., '97)</td>
<td>Associate Prof.</td>
<td>Algorithms and computational genomics</td>
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<tr>
<td>Andrei Bulatov</td>
<td>Ural State Univ. (Ph.D., '95)</td>
<td>Assistant Prof.</td>
<td>Constrain satisfaction; complexity</td>
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<tr>
<td>Funda Ergun</td>
<td>Cornell (Ph.D., '97)</td>
<td>Assistant Prof.</td>
<td>Algorithms and networking</td>
</tr>
<tr>
<td>Ghassan Hamarneh</td>
<td>Chalmers Univ. (Ph.D., '01)</td>
<td>Assistant Prof.</td>
<td>Medical image analysis</td>
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<tr>
<td>Mohamed Hefeeda</td>
<td>Purdue (Ph.D., '04)</td>
<td>Assistant Prof.</td>
<td>Networking and distributed systems</td>
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<tr>
<td>Valentine Kabanets</td>
<td>Toronto (Ph.D., '00)</td>
<td>Assistant Prof.</td>
<td>Computational complexity</td>
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<tr>
<td>Ted Kirkpatrick</td>
<td>Oregon (Ph.D., '00)</td>
<td>Assistant Prof.</td>
<td>Haptics and HCI</td>
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<tr>
<td>Jiangchuan Liu</td>
<td>HKUST (Ph.D., '03)</td>
<td>Assistant Prof.</td>
<td>Networking and communications</td>
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<tr>
<td>Greg Mori</td>
<td>Berkeley (Ph.D., '04)</td>
<td>Assistant Prof.</td>
<td>Computer vision</td>
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<tr>
<td>Anoop Sarkar</td>
<td>Pennsylvania (Ph.D., '02)</td>
<td>Assistant Prof.</td>
<td>Natural language processing</td>
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<tr>
<td>Tamara Smyth</td>
<td>Stanford (Ph.D., '04)</td>
<td>Assistant Prof.</td>
<td>Computer-based music theory</td>
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<tr>
<td>Eugenia Ternovska</td>
<td>Toronto (Ph.D., '01)</td>
<td>Assistant Prof.</td>
<td>Computational logic</td>
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<tr>
<td>Richard Vaughan</td>
<td>Oxford (D. Phil., '98)</td>
<td>Assistant Prof.</td>
<td>Robotics and autonomous systems</td>
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<tr>
<td>Jian Pei</td>
<td>SFU (Ph.D., '02)</td>
<td>Assistant Prof.</td>
<td>Databases and data mining</td>
</tr>
<tr>
<td>Kay Weise</td>
<td>Regina (Ph.D., '99)</td>
<td>Assistant Prof.</td>
<td>Algorithms and bio-informatics</td>
</tr>
<tr>
<td>Richard Zhang</td>
<td>Toronto (Ph.D., '03)</td>
<td>Assistant Prof.</td>
<td>Computer graphics</td>
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</tbody>
</table>

* Canada Research Chair
Research strengths and growth

- New hires enhance and complement our research strengths in:
  - Artificial intelligence
  - Databases
  - Multimedia research
  - Software and hardware systems
  - Theory, algorithms, and combinatorics

- Many faculties have long enjoyed international reputation in their fields

- We are still relatively young, and are growing fast

  - Sep. 2004: CRC in computational genomics
  - 2004 – 2005: New buildings and research facilities, e.g., IRMACS, TASC I, SCIRF
  - 2004: New School of Interactive Arts and Technology opens at SFU, Surrey
  - Tier I Canada Research Chair to be hired
Research labs and groups

- Algorithms & Optimization Group
- Autonomy Lab
- Computational Logic Lab
- Lab for Computational Biology
- Computational Vision Lab
- Database and Data Mining Lab
- Graphics, Usability, & Visualization (GrUVi) Lab
- Intelligent Systems Lab
- Logic & Functional Programming Group
- Medical Computing
- Medical Image Analysis Lab
- Natural Language Lab
- Network Modeling Lab
- Parallel & Distributed Computing
- Programming Languages
- Software Technology Lab
- Vision & Media Lab
Some research affiliations and facilities

- PIMS
  - PIMS-CS Distinguished Lecture Series

- MITACS
  - NCE located at SFU
  - Research funding & student support, e.g., Student Internship Program

- Center for Scientific Computing (CSC)
  - Close to 80 members from SFU faculties in math, statistics, computing sciences, etc.
  - Weekly CSC seminars, mostly given by outside speakers

- SCIRF: Scientific Computing & Imaging Research Facility (CFI-funded)
  - Newly opened
  - Interdisciplinary research facility hosting a 64-CPU SGI Altix with 64GB RAM, and more

- IRMACS: Interdisciplinary Research Facility for the Math and Computational Sciences
  - First facility of this kind in Canada
  - New $12M building in operation starting September 2004

- New CFI-funded Usability Lab
Research influence

- Ongoing collaborations and students exchanges with the US, Australia, UK, Germany, China, France, India, …

- Strong ties with the industry, e.g., IBM, Microsoft, Electronic Arts (EA), …, for joint research projects and student employment

- Our school has its own share of spin-offs …
Graduate program: overview

- Degree requirements: course breadth & completion of M. Sc. or Ph.D. thesis
- M. Sc. has a project option
- Application deadline: Feb. 1, 2005 for fall admission
- Financial support
  - Ph. D. students in good standing: 3 years guaranteed for at least $19,000 per year
  - M. Sc. students: supported for a minimum of 1 year (at least $16,500)
  - In practice, we typically support M. Sc. students for at least five semesters and Ph.D.’s for up to four years if their performance warrants it
Scholarships, fellowships, and grants

- CS Entrance Scholarships: one-time $2,000 to all new students
- University, FAS, and CS Graduate Fellowships $6,000 per semester
- Competitive top-ups for NSERC Scholarship recipients
- Merit-based special entrance scholarships: $1,000 - $5,000
- University-wide entrance scholarships: $15,000 - $18,000 in first year
- Other scholarships from BC Government, e.g., ASI, Science Council of BC
- About 40 other (private) scholarships
- Travel grants from FAS and CSGSA/SFSS for students presenting papers, totaling about $700 - $800
Course requirements

- Three course areas
  - Area I: Formal topics in computer science
  - Area II: Computer systems
  - Area III: Knowledge and information systems, with sub-areas in AI, Graphics, HCI, DB, etc.

- Breadth requires coverage in all three areas, specifically

<table>
<thead>
<tr>
<th>M. Sc. with thesis</th>
<th>M. Sc. with project</th>
<th>Ph.D.</th>
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<tbody>
<tr>
<td>5 courses (4 in CS); at least one from each area</td>
<td>8 courses (6 in CS); at least one from each area</td>
<td>8 courses beyond B. Sc.; at least 4 from SFU; show breadth from 6 sub-areas</td>
</tr>
</tbody>
</table>
More facts and figures

- We now admit about 50 students per year, from over 20 different universities and 9 different countries
  - About 1/4 are female students;
  - More than 1/3 are Canadian students
  - About 1/3 are Ph.D. candidates
- We encourage female applicants and the retention of female students
- Admission to our graduate program has been very competitive (less than 10% of applicants were given first-round offers)
- About half of our Ph.D.’s take up faculty positions at Canadian and US institutions after graduation (statistics drawn from 1997 – 2004)
Life at SFU & Vancouver

- Active student bodies and interesting faculties
  - WICS: Women In Computing Science (wics.cs.sfu.ca)

- An active arts scene
  - World-known for its film industry and film festivals
  - Active local music scene from indy, jazz, blues, to folk

- Vancouver is consistently ranked as the world’s best city to live in
  - Mild weather, beautiful sceneries, and a place for the outdoors
  - Possible plan for a day in the weekend: ski in the morning, shop during the day, and stroll the beach at sunset
Did you know?

- SFU is among the top 10 in Outside Magazine's (Sep. 2003 issue) 40 Best College Towns
- Only Canadian University to make the list
- Claimed sixth place, ahead of such places as Stanford, Princeton, and Cornell
- The article
  - ranks "North America's best place to learn, live, work, and play," and
  - recognizes 40 schools "that turn out smart grads with top-notch academic credentials, a healthy environment, and an A+ sense of adventure."
Still Questions?

Email: gradpgm@cs.sfu.ca
URL: http://www.cs.sfu.ca/gradpgm/