Meet Tasneem!

Samsung SRA-SV

Senior Manager

Industry Standards Chair, Board

Par Lab End of Project

Tasneem Brutch

Samsung Electronics

May 30, 2013

Affiliate Membership and Sponsored Projects

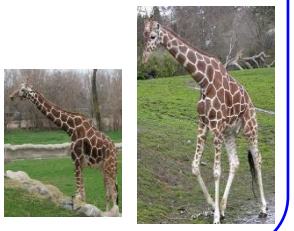
- Samsung Par Lab membership, 2008
  - Joined Par Lab as the first industry affiliate member
- Interns:
  - Bor-Yiing Su: Intern in 2009, and continued into 2010.
    - Advisor: Kurt Keutzer
  - Matt Torok: Intern in 2013
    - Advisor: Rastislav Bodik
- Chaperone Lab affiliate membership since 2012
- Sponsored projects:
  - Superconductor: Big Data Visualization using WebCL
    - Leo Meyerovich, Matt Torok, Rastislav Bodik
  - Computer Aided Development of Parallel Programs for Mobile Applications
    - Emina Torlak and Rastislav Bodik

Object Recognition System

Trained Categories

Bottles

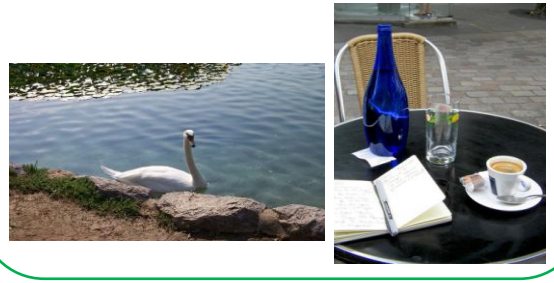
Giraffes



Mugs

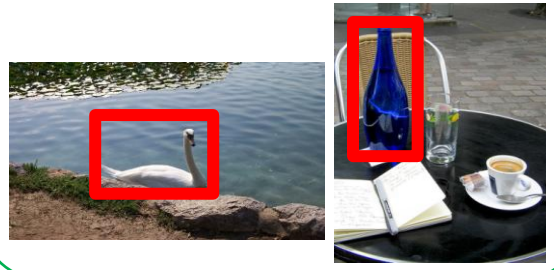
Swans

Image Queries



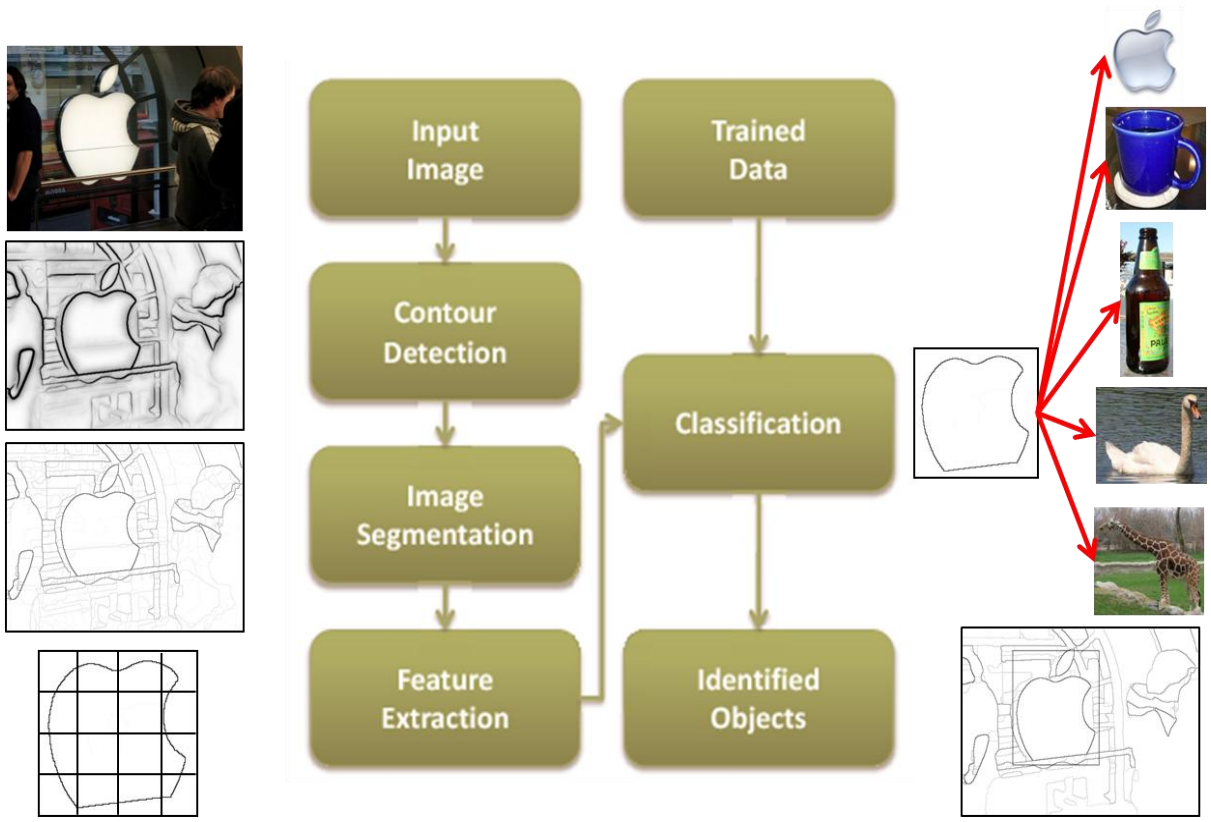
Object Recognition System

Outputs



Content Based Image Recognition

* A region-based object Recognition System
* Parallelized for improved performance



Content Based Image Recognition

* **Publications**
  * Bor-Yiing Su, Tasneem Brutch, Kurt Keutzer, "A Parallel Region Based Object Recognition System," in *IEEE Workshop on Applications of Computer Vision (WACV 2011)*, pp. 81-88, Hawaii, January 2011.
  * Tasneem Brutch, Bor-Yiing Su, "Architecting an Object Recognition System Using Parallel Design Patterns," in *Parallel and Distributed Computing and Systems (PDCS-2010)*, Marina del Rey, November 2010.
  * Bor-Yiing Su, Tasneem Brutch, Kurt Keutzer, "Parallel BFS Graph Traversal on Images Using Structured Grid," in *IEEE International Conference on Image Processing (ICIP 2010)*, pp. 4489-4492, Hong Kong, September 2010.
* **Patents**
  * Bor-Yiing Su, Tasneem Brutch, "Structured Grids and Graph Traversal for Image Processing," submitted as US patent.
  * Bor-Yiing Su, Tasneem Brutch, "Structured Grids for Label Propagation on a Finite Number of Layers," submitted as US patent.

WebCL for Big Data Visualization

* Project definition and discussions with Ras Bodik, in 2011/2012
* Big data visualization language, with GPU rendering, for orders of magnitude speedup over JavaScript.
* Samsung joined Chaperone Lab as an affiliate member In 2012
* Project funded under Chaperone Lab
* Presented as a use case of the WebCL standard, currently being defined.
* Demoed in:
  * Siggraph Asia, Singapore
  * Khronos Face to Face, in Orlando and Budapest
  * Khronos March 28 Meetup, San Francisco

Computer Aided Development of Parallel Programs

* Enables semi-automated development of parallel programs for mobile applications.
* Development of a suite of tools for automatic synthesis, verification, angelic execution, and fault localization of high-performance codes.
* To support a programming style based on refinement, optimized from a functionally correct reference for parallel hardware.

Communication-Avoiding

Grey Ballard and Michael Anderson

ParLab Final Party

May 30th 2013

Importance of Communication Avoiding

Jack Dongarra
University of Tennessee
Oak Ridge National Lab