Monday

NOVEMBER 3
4:10 PM – 5:25 PM
HRBB 124

Professors in CSE department will give 90 seconds presentation about their research area.

All faculty, staff and students are invited !!!

Tuesday

November 4
2:30 PM – 4:30 PM
HRBB 301

Visit Labs, meet graduate students, see demos, have your passport signed and get treats!!

Passports and maps will be available in HRBB 301.

Participants with at least 5 stamps on their passport will be entered into drawing for exciting prizes !!!!
Welcome to the 5th Annual CSE Trick-or-Research!

• First Session: All About CSE Research
  - Monday November 3, 2014
  - 4:10-5:00pm 124 HRBB (now)
  - Each Professor will be given 90 seconds to talk about their group’s work

• Second Session: Meet CSE Labs
  - Tuesday November 4, 2014
  - 2:30-4:30pm – The 2nd, 3rd, 4th, 5th floors of HRBB and Teague and ETB
  - Visit the research groups and learn about their research first hand and pick up a few treats on the way
  - Get your lab passport stamped by at least 5 labs and you will be eligible for prizes
  - Maps, descriptions of the research groups and the Lab Passport will be available at the 3rd floor front office by 1:30pm on Tuesday.

Sponsored by the Department of Computer Science and Engineering and the Aggie Women in Computer Science (AWICS)
Mobile Ad Hoc Networks

Consistency Conditions for Distributed Storage

Partial Synchrony and Failure Detection

Algorithms, Correctness Proofs, Lower Bounds, Models,...
Microprocessor Test – Hank Walker
Dezhen Song, Networked Robots Lab

http://telerobot.cs.tamu.edu (HRBB 316)

- Networked Robots and Cameras for Nature Observation
- Navigation and Scene Understanding for Mobile Robots
- Wireless Localization and Search of Transient Objects
Intelligent User Interfaces Group
Frank Shipman

**Selected current projects:**

- Multi-application interest modeling
  - Exploring how to merge evidence of interest from user activity across multiple applications

- Digital library of sign language video
  - Techniques for detecting and recognizing sign language

- Multistream data management and analysis
  - Environment for storing, locating, visualizing and interpreting time-stream data sets
How do we engineer distributed robotic systems?

Distributed algorithms for autonomous planning, scheduling, and task-allocation

• How do we deal with uncertainty?
• How do we deal with robot failures?
• How do we scale to large multi-robot systems?
• How do we reason about inter-agent interference?
Graphics & Geometric Modeling
Scott Schaefer (http://faculty.cs.tamu.edu/schaefer)
Parallelizing Compilers for Multicores

Automatically transforms sequential code into parallel code using OpenMP

- Uses SPECULATIVE parallelization technology
- Uses HYBRID ANALYSIS technology for combining Static and Dynamic Analysis
- Achieves full parallel coverage for > 25 codes.

A library of parallel generic Components similar to C++ STL

- Applications Developed in STAPL
  - Particle Transport – PDT
  - Bioinformatics – Protein Folding
  - Geophysics – Seismic Ray Tracing
  - Aerospace - MHD
Human-Centered AI Robotics Lab (HRBB 209)

Center for Robot-Assisted Search & Rescue (HRBB 344)

Prof. Robin R. Murphy, PhD
Raytheon Professor of Computer Science & Engineering
murphy@cse.tamu.edu
Current Research
Data Analytics Codesign,
Low-Power System Design,
System-on-Chip: Network and Security

Contact: Rabi Mahapatra, rabi@tamu.edu
Labs: HRBB 514 A-C
John Keyser

*Computer Graphics*

- Physically-Based Simulations for Graphics
- Geometric Modeling
- Brain Networks Lab
- Other
TACO Lab

• Texas Architecture and Compiler Optimization
  – Assoc. Prof. Daniel A. Jiménez
  – Four current Ph.D. students
  – Funding for more students and/or postdoc
    • 4 current NSF research grants etc.
  – Collaborations with industry (AMD, Intel, Samsung)
  – General area:
    • Impact of code/compiler behavior on microarchitectural structures
    • Algorithms to exploit this behavior to improve performance
    • Ex. code layout optimizations, branch prediction, last-level cache management, memory scheduling, etc.
Information Innovation Lab

Professor: Anxiao (Andrew) Jiang

Data Storage
Programming Tools, Techniques, and Languages
Jaakko Järvi

What?

• **Software research:**
  • helping programmers to create better systems

• **Current projects:**
  • Declarative GUI programming
  • Functional reactive programming
  • Multi-selection (meaning of mouse clicks)
  • Languages and libraries (C++)

    ```cpp
    for_each(a.begin(), a.end()
        [](int x) { cout << x; }
    )
    ```

Why?

• Poor quality software → wasted effort → frustration → unhappiness

• Good software → not quite as much unhappiness
SOFTWARE IS AWESOME
activity recognition algorithms that can
● identify and understand a person's behavior and actions
● infer and predict a person's intentions and future choices

wearable technologies and sensors that can
● enhance a person's senses
● communicate environmental and personal information to the wearer
● help people be more cognizant of their environment
● enable people to make better choices.
We study how man-made and biological sensory systems interact with, learn and adapt to their environments.

- **Observe**: Coordinated monitoring and detection
- **Act**: Coordinated prevention, recovery, and attribution
- **Decide**: Mathematical modeling and analysis
- **Orient**: Coordinated Analysis & Reverse Engineering
- **Enforcement**: Data & guidance
- **Decision**: Insights & guidance

Success Lab – Guofei Gu - http://faculty.cse.tamu.edu/guofei
Bruce Gooch – find the cat!
Scalability, Availability, Manageability as an after-thought

Innovation demonstrated through prototype
Focus on novel offering/solution
Agile approach on novel domain

Focus NOT on software artifacts

State-of-art research approaches

Presentation Layer

Core application

Back-end

In-house Java/C++/C/python/rubis/node.js/cgi/perl

Hadoop/Spark/BigTable

Graph library

cassandra

mysql

mongoDB

redis

File system

dilma@cse.tamu.edu
Yoonsuck Choe: Brain Networks Lab

- Computational neuroscience
- Computational neuroanatomy
- Neuroinformatics
Graphics & Vision
Prof. Jinxiang Chai

Human Motion Capture

Human Motion Modeling, Synthesis, Control & Simulation
Algorithms & Applications

Nancy Amato (http://parasol.tamu.edu/~amato)

Motion Planning
- Robotics, intelligent CAD, Animation

Computational Geometry

STAPL: Parallel Algorithms & Libraries
- Physics: Particle Transport
- Bioinformatics: Protein Folding
- Geophysics: Seismic Ray Tracing

Computational Biology

Multi-Agent Systems
Trick-or-Research Lab Visits Tomorrow!

- **Tuesday November 4 (tomorrow!) from 2:30-4:30pm**
  - Maps and listing of research groups and Lab Passports will be available by 1:30pm Thursday near the front office on the 3rd floor of HRBB
- **Passports with at least 5 Lab Stamps can be entered into a raffle for great prizes**
  - passports should be submitted to the CSE Main Office in 302 HRBB or the Parasol Lab in 425 HRBB after 4:30pm on Tuesday or before 3pm on Wednesday. Winners will be announced next week.