

SNEHA POPLEY

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<http://stuwww.tcu.edu/sepopley>

Summary

- Research Interests in Programming Languages include functional programming, logic programming, logical frameworks, type theory, higher-order abstract syntax, and theorem proving
- Involved in research since freshman year of undergraduate studies
- Proficient in Java, C/C++, Ruby, Unix, and Windows
- Experience with Coq, SASyLF, Twelf, ML, and OCaml

Education

Texas Christian University

Bachelor of Science, Computer Science & Bachelor of Arts, Mathematics

Fort Worth, TX

May 2010

- Expected Graduation with Department Honors
- Overall GPA – **3.9/4.0**

Posters and Presentations

Published

S. Popley, A. Sanchez, “Integration of Texture and Shape algorithms with Face Recognition using Eigenvectors”, *TCU Student Research Symposium*, April 2009.

S. Popley, A. Sanchez, “Shape-Based Face Detection in Images”, *TCU Student Research Symposium*, April 2008.

In Progress

S.Popley, J. Aldrich, “Formalization of SASyLF in M_2^+ ”

Research Experience

Research Intern

Institute for Software Research (Carnegie Mellon University)

2009–Present

Pittsburgh, PA

- Working with Dr. Jonathan Aldrich and Robert Simmons to formalize SASyLF, an LF-based proof assistant, in LF using M_2^+
- Creating SASyLF Core Calculus that syntactically resembles M_2^+ but semantically resembles SASyLF as a part of the formalization process
- Attended Principles of Programming (POP) seminars throughout the summer
- Presented research to the POP and PLAID research groups at Carnegie Mellon

Research Assistant

Crescent Lab for Intelligent Systems (TCU Computer Science Dept.)

2007–Present

Fort Worth, TX

- Involved in the Crescent Lab as a Research Assistant since freshman year
- Collaborate with Dr. Antonio Sanchez on Image Recognition and Face Detection
- Represent Crescent Lab at the Annual Student Research Symposium

Research Assistant

Programming Languages Department (University of Pennsylvania)

Summer 2008

Philadelphia, PA

- Paired with Dr. Stephanie Weirich through the Computing Research Association- Distributed Research Experience for Undergraduates (CRA-DREU)

- Studied the properties of dependently-typed languages through Coq by the analysis of Binary Search Tree algorithms
- Attended weekly paper discussions as a member of the PLClub
- Presented results to graduate students and professors in the Programming Languages Department

Tutor**2007–Present****TCU Computer Science Dept.****Fort Worth, TX**

- Assist students with their Java programs at the helpdesk 2-3 times a week
- Aid students in their development from “Hello World” programs to implementing control structures, collection classes, listeners, and classes

Projects

Formalization of SASyLF <http://stuwww.tcu.edu/sepopley/>**2009–Present**

- Formalizing SASyLF, an LF-based proof assistant specialized to checking theorems about programming languages and logics, in M_2^+
- Creating a core calculus that acts as a transition between SASyLF and M_2^+ while exploring other logical frameworks for formalization such as Delphin and Beluga
- Converting summer project into senior Honors thesis with committee members Dr. Jonathan Aldrich, Dr. J. Richard Rinewalt, Dr. Antonio Sanchez, and Dr. Rhonda Hatcher
- Using: Twelf, SASyLF, and M_2^+ with experimentation in JstAdd, JavaCC, and ML,

Analysis of Dependent Types <http://stuwww.tcu.edu/sepopley/>**Summer 2008**

- Implemented Binary Search Tree algorithms in Coq to analyze the properties of dependent types in programming languages
- Modified the existing algorithms to observe the changes in proof structure and tactics
- Analyzed possible improvements for tactics and functional programming
- Presented findings to a dozen graduate students and professors in the University of Pennsylvania Programming Languages Dept.
- Used: Coq, CoqIDE

Shape, Texture, and Color-based Image Recognition <http://crescent.cs.tcu.edu/>**2007–Present**

- Integrate Generalized Hough transform with ALISA to segment faces from images
- Customize and modify dataflows in JavALISA to include Generalized Hough transform
- Develop classifier files to improve image segmentation in ALISA
- Implemented Least Squares to approximate face position when a face is the lone notable area of skin present in the specified image
- Using: JavALISA, Java 5, ImageJ, Eclipse

TCU Chancellor’s Leadership Program Website <http://www.clp.tcu.edu>**2008–Present**

- Create and maintain an online resource for the Chancellor’s Leadership Program that houses applications, pictures, events, and project information
- Integrate Google Calendar and Picasa into the website to simplify data updates
- Using: Ajax, HTML, JavaScript

Other Experience

Participant**2006–Present****ACM Programming Contest****Fort Worth, TX**

- Appointed President of the local team in 2009
- Duties includes planning weekly meetings, choosing problems for practice meetings, selecting teams for regional contest, and organizing department contests every semester
- Solve and discuss practice problems during weekly meetings with the teams
- Selected to represent TCU at the ACM South Central Regional Programming Competition since freshman year

Student Worker**2006–2008****TCU International Admissions****Fort Worth, TX**

- Managed data entry of applicants
- Interacted with prospective students in person as well as electronically
- Assisted in planning and implementing the annual Phonathon for International Ambassadors

Honors

- Pi Mu Epsilon National Mathematics Honor Society (2008–Present)
- Upsilon Pi Epsilon National Honor Society for Computing Sciences, *President* (2009–Present)
- Mortar Board National College Senior Honor Society (2008–Present)
- TCU Honors Program (2006–Present)
- TCU Scholar (2006–2008, 2009–Present)
- TCU Dean’s List (2006–Present)
- TCU Provost’s Scholarship (2006–Present)
- Nominated for TCU Pillar of Leadership Award (2008)

Grants and Awards

- Google Anita Borg Memorial Scholarship Finalist (2009)
- Earned Dan Drew Scholarship from Upsilon Pi Epsilon national honor society for computing sciences (2009)
- Awarded \$750 grant from Texas Christian University for Image Recognition Research (2007)
- TCU Women’s Scholarship (one of three recipients) (2009)

Involvement and Service

- ACM South-Central Regional Programming Team, *President since 2009* (2006–Present)
- TCU Computer Science Society, *President in 2008* (2006–Present)
- Association for Computing Machinery (2006–Present)
- Chancellor’s Leadership Program, *Steering Committee Member since 2007* (2006–Present)
- Grace Hopper Celebration for Women in Computing, *Student Volunteer* (2009)
- OOPSLA (International Conference on Object Oriented Programming, Systems, Languages, and Applications), *Student Volunteer* (2009)
- Connections (TCU Leadership Center) (2007)
- Resident Student Ambassador (2007)
- State of Leadership Conference (2006–Present)
- College Student for a Day (2006–Present)
- International Ambassadors, *Organizer until 2008* (2007–Present)
- Boo at the Zoo (2006)

References

Dr. Jonathan Aldrich

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 Carnegie Mellon University
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Dr. James Comer

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