Biographical Information

Keith Schwarz   (650) 723-4350
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Academic History

Stanford University

MS, Computer Science   *(June 2011)*
BS, Computer Science, with Distinction; Minor in Mathematics   *(June 2011)*

Employment Record

Computer Science Department, Stanford University
Senior Lecturer   *(January 2018 –)*
Lecturer   *(September 2011 – December 2017)*

Courses: CS9, CS103, CS103A, CS106A, CS106B, CS143, CS161, CS166.
Total Students Taught: ≈8,000.
Advisees (Masters and Undergraduate): ≈80 current, ≈130 former.

New Courses Introduced: CS9 (with Cynthia Lee), CS103A, CS166.
Student-Initiated Courses Sponsored: CS42.

SCPD Courses Taught: CS103, CS106A, CS106B, CS143, CS161.

Software Engineering Intern, Palantir Technologies   *(June 2010 – September 2010)*

Platform Intern, Mozilla Corporation   *(June 2008 – September 2008)*

University and Departmental Service

Member, Undergraduate Advisory Council   *(September 2017 – Present)*

Guest-in-Observance, Academic Progress Review Board   *(September 2016 – June 2017)*

Instructor, Girl Code @Stanford   *(June 2013 – Present)*
Summer program teaching introductory programming to high-school
girls, primarily from underrepresented minorities. Roughly 40% of
students go on to take a CS class in their first year of college; roughly
25% of students declare CS within their first two years of college.

Student Group Faculty Advising
CS + Social Good, Women in Computer Science

Awards and Honors

Tau Beta Pi Teaching Honor Roll   *(Stanford, 2017)*

Walter J. Gores Award   *(Stanford, 2015)*
Stanford's highest teaching award.

Stanford Society of Latino Engineers Faculty Member of the Year Award   *(Stanford, 2015)*

CS Department Distinguished Service Award   *(Stanford, 2014)*

JSK Journalism Fellowship Favorite Professor Award   *(Stanford, 2013)*

Tau Beta Pi Award for Excellence in Undergraduate Teaching   *(Stanford, 2012)*

Stanford Society of Women Engineers Professor of the Year Award   *(Stanford, 2012)*

Henry Ford II Scholar   *(Stanford, 2010)*

George Forsythe Memorial Award   *(Stanford, 2010)*

Frederick Emmons Terman Award   *(Stanford, 2010)*

Bibliographical Information

Conference Publications

Eric Roberts, *Keith Schwarz*, "A Portable Graphics Library for Introductory CS,"   *(2013)*
ITiCSE '13, pp. 153 – 158, 2013.

> Describes architecture and advantages of the graphics package used in Stanford's
> CS106B and CS106X courses.

Nick Parlante, Julie Zelenski, *Keith Schwarz*, Dave Feinberg, Michelle Craig, Stuart Hansen,   *(2011)*
Michael Scott, and David J. Malan, "Nifty Assignments," *SIGCSE '11*, pp. 491 – 492, 2011.

> Introduced assignment "Evil Hangman," which has since been adopted at UC Berkeley,
> University of Washington, Harvard, Duke, and many other CS programs.

Unrefereed Online Publications

"Darts, Dice, and Coins: Sampling from a Discrete Distribution,"   *(December 2011)*
http://www.keithschwarz.com/darts-dice-coins/.
> A comparison of approaches to sampling from a discrete probability
> distribution. Approximately 150,000 views.

"Generating Subsets Lexicographically with Binary Numbers and Cyclic Shifts,"   *(March 2011)*
http://www.keithschwarz.com/binary-subsets/.
> An algorithm for generating subsets in lexicographical order using bitwise
> manipulations. Approximately 30,000 views.

"Smoothsort Demystified," http://www.keithschwarz.com/smoothsort/.   *(January 2011)*
> Derivation and exposition of Dijkstra's smoothsort algorithm.
> Approximately 45,000 views.

"Archive of Interesting Code," http://www.keithschwarz.com/interesting/.   *(January 2010 – Present)*
> Detailed descriptions and implementations of classic algorithms and
> data structures. Approximately 600,000 views.

Invited, Non-Refereed Presentations

"Getting Started in Computer Science," LinkedIn Kids In Coding, Sunnyvale, CA.   *(October 2016)*
> Keynote at an introductory programming event for the Boys and Girls Club
> hosted at LinkedIn.

"Getting Started in Computer Science," Eastside Preparatory High School,   *(October 2015)*
East Palo Alto, CA.
> Kickoff to the school's Hour of Code event through Code.org.

"Designing Inclusive Engineering Courses," Year of Learning Teaching Ideas   *(October 2015)*
Showcase, Stanford, CA.
> Discussion of techniques for building a welcoming engineering classroom
> supportive to students of all backgrounds.

"Getting Started in Computer Science," LinkedIn Kids In Coding, Sunnyvale, CA.   *(October 2015)*
    Keynote at an introductory programming event for the Boys and Girls Club
    hosted at LinkedIn.

"All About Passwords," CSI LEAD, Stanford, CA.   *(July 2015)*
    Exploration of exciting topics in computer science, such as zero-knowledge
    proofs and muscle-memory passwords.

Panelist, she++ Documentary Premiere, Stanford, CA.   *(April 2013)*

"Darts, Dice, and Coins," Stanford ACM Tech Talks, Stanford, California.   *(January 2012)*
    Derivation of the alias method for sampling from a discrete distribution.

"Fun with Number Systems," University of Pennsylvania, Philadelphia, PA.   *(April 2011)*
"Fun with Number Systems," Cornell University, Ithaca, NY,   *(April 2011)*
    Sample lecture. Exploration of algorithms motivated by number systems,
    such as finding a mismatched item on a balance and generating permutations.

Course Readers

CS103 Course Reader "Mathematical Foundations of Computing." (351p)   *(June 2013)*
    Introduction to discrete structures and mathematical proof. Used in CS103.

CS106L Course Reader. (548p)   *(June 2009)*
    Exploration of the C++ language aimed at introductory CS students.

Other Media

"Binary, Hanoi, and Sierpinski," YouTube, https://youtu.be/2SUvWfNJSsM.   *(November 2016)*
    Explores the connection between the binary and ternary number systems,
    the Towers of Hanoi problem, and Hamiltonian paths in Sierpinski graphs.
    Collaboration with YouTuber `3blue1brown`. Approximately 130,000 views.

Featured in "The She++ Documentary," YouTube, https://youtu.be/DqrfPCGo2aQ.   *(February 2013)*
    Approximately 100,000 views.

Interviewed in BBC Radio 5 show "Outriders."   *(November 2011)*
    Describing project "Archive of Interesting Code."

Miscellaneous

Rank ≈#130 on Stack Overflow (username: `templatetypedef`).
    Top answerer in [algorithms] and [data-structures] tags. Top-ranked answers on LL/LR
        parsing techniques, pseudopolynomial time, the $\Omega(n \log n)$ sorting barrier, Fibonacci
        heaps, and Fenwick trees. Answers viewed approximately 15 million times.