Fritz H. Obermeyer

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Education

Ph.D. in Pure and Applied Logic, Carnegie Mellon University   (Aug. 2005 – June 2009, expected)
  Thesis topic: Automated equational reasoning in untyped lambda-calculi.

M.S. in Mathematics, Colorado State University   (Jan. 2002 – May 2004)
  Thesis topic: Bayes Nets in ambiguity assessment of data association

B.S. in Physics+Applied Math, Colorado State University   (Aug. 1997 – Dec. 2001)

Professional Experience

Summer Intern, Stottler-Henke A.I.   (Summer 2008)
  Worked on large codebase for multi-agent sensor resource management.
  Developed geometry algorithms for ballistic missile intercept.

Research Scientist, Numerica Corporation   (2002 – 2005)
  Developed algorithms; wrote successful proposals for DOD contracts.
  Managed 2-year $\times$ 2-person project developing tracking algorithms
  and Python implementation. Wrote reports and research papers.

Summer Intern, IBM Boulder   (Summer 2001)
  Worked in small research group on color printing technology.
  Developed and patented printing methods in IBM's active intellectual property culture.

Research Experience

Carnegie Mellon University   (2005 – Present)
  Focussing on programming language theory and program verification.
  Adapted computational algebra algorithms to automated theorem-proving.
  Developed novel verification algorithm for equational reasoning.

Stottler-Henke A.I.   (Summer 2008)
  Developed fast spherical geometry algorithms for ballistic missile intercept.

Numerica Corporation   (2002 – 2005)
  Developed a "Bayesian Network Tracking Database" in support of
  object classification in multi-target tracking (masters thesis).
  Developed high-accuracy nonlinear batch filters with Professor and CEO Aubrey Poore.
  Worked on ambiguity assessment in data association problems.

Industrial Math Seminar at CSU   (2003)
  Developed fault-detection/classification algorithms in conjunction with Siemens.

IBM Printing Division   (2001)
  Designed and analyzed linescreens for color printing with IBM Fellow Joan Mitchell.
  Analyzed jpeg image compression methods.

Technical Skills

Practical: automated deduction - program verification - large-scale software development - Bayesian filtering - belief propagation - ambiguity assessment - nonlinear optimization - logic programming - constraint programming - graphics programming - data visualization - small project management

Writing: Conference papers - technical reports - proposals - patent applications

Languages: native English, basic German

Software:		
	10+ years	C/C++ - Unix/Linux - Latex - HTML
	5+ years	Python - OpenGL - Windows - Maple
	1+ years	Matlab - Excel
	3 months	Java - Javascript - AJAX
	acquaintance	ML - Prolog - R - Mathematica

Published Software

Johann (C++, `http://askjohann.org`, (2004 – 2009))
A system for automated equational reasoning about untyped lambda-calculi, focussing on knowledge representation, verification, and theorem proving.

Jenn 3D (C++/OpenGL, `http://jenn3d.org`, (2001 – 2006))
An immersive tool for visualizing 4-dimensional Coxeter polytopes, focussing on real-time 3D rendering, spherical geometry, and interface design.

BNTD (Python/C++, proprietary, (2002 – 2005))
A Bayes Net Tracking Database for managing uncertainty in a data association and identification problem in multiple target tracking.

Published Papers

Short-term Ambiguity Assessment to Augment Tracking Data Association Information, S. Gadaleta, S. Herman, M. Levedahl, S. Miller, F. Obermeyer, B. Slocumb, and A. Poore, Fusion (2005)

A Bayesian Network Tracking Database Fritz Obermeyer and Aubrey Poore, Proceedings of SPIE Signal and Data Processing of Small Targets (2004)

Batch maximum likelihood (ML) and maximum a posteriori (MAP) estimation with process noise for tracking applications, A. Poore, B. Slocumb, B. Suchomel, F. Obermeyer, S. Herman, S. Gadaleta, Proceedings of SPIE Signal and Data Processing of Small Targets (2003)

Patents

US Number 6956670, (Filed in 2000) With Joan Mitchell of IBM, *et al.*,
Concerning the combination of multiple linescreens of different resolution in color printing. This innovation resulted from examining the power spectra of interacting linescreens.

Teaching Experience

Teaching Assistant, Introductory proofs course, Carnegie Mellon (fall 2005, spring 2009)

Instructor, 1st year calculus, Carnegie Mellon (summer 2007)

Teaching Assistant, 1st and 2nd year Calculus, Carnegie Mellon (spring 2006 – spring 2008)

Instructor, Elementary financial math, including lab design, Colorado State (spring 2004)

References: Provided upon request.