Steven Fitzgerald

Professor

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Objective

To join, and to become an essential member of, a team; a team that integrates forward-thinking technologies, produces innovative solutions to complex problems, and encourages continual improvement.

Career Summary

I have a quiet passion and enthusiasm for building teams. I have demonstrated this ability within academia and within industry. Every member of the team is encouraged to manage up, to mentor out, and to leverage each other's unique talents and experiences to move objectives forward.

Consequently, I have a solid reputation for delivering and achieving goals.

Most recently, I have focused my attention on developing the skill sets (both soft and hard) of emerging technologists, and I have used their curiosity to keep abreast of technology trends.

Professor of Computer Science AUGUST 1994 - PRESENT
California State University, Northridge (CSUN)

Director NOVEMBER 2013 - JUNE 2019
Matador Emerging Technology and Arts Laboratory, CSUN

Vice President, Technical Services JANUARY 2010 - JANUARY 2013
Eucalyptus Systems, Inc.

Chief Technology Officer JUNE 2001 - JANUARY 2007
California State University, Northridge (CSUN)

Recent Sandbox Projects

In Progress:

- Implementing a browser-based MIPS assembler/simulator using Vue.js
- Used "parsing expression grammars", via PEG.js, to implement a MIPS parser.
- Comparison between the ARM and MIPS instruction set.

Web Infrastructure:

- Performance evaluation of CGI to interface with Docker containers.
- Performance comparison between CGI, FastCGI, and SimpleSGI wire protocols.
- Implementation of netstring, FastCGI, and SimpleCGI in C.
- Examination of 'php-fpm's strategy for process management and FastCGI.
- Investigation of AWS lambda implementation, via xinetd and SimpleSGI.

Other:

- Design of a Class Search project to be implemented via VUE.
- Developed Bash Command Line Tools for GitHub Classroom grading support.
- Developed a binary-values package in JavaScript for real binary numbers.

Education

Doctor of Science, Computer Science DECEMBER 1994
University of Massachusetts, Lowell

Professional Experience

Professor / Computer Science Department 8/1994 - PRESENT
California State University, Northridge

Current activities involve retrofitting the Department's freshman Computer Architecture course to make it more current and relevant:

- to leverage git for all assignments, projects, and class material
- to incorporate communication models, alongside computation models
- to expose students to practical encoding methods, e.g., base64, utf-8

Major activities involved curriculum development to align the Department's Computer Information Technology (CIT) major with the needs of industry and to incorporate new technologies.

- Redesign of "CIT 160: Internet Technologies"
  - to utilize docker containers
  - to emphasis the command-line interface and automation techniques
- Redesign of "CIT 384L Web Development and Hosting"
  - to infuse automate deployment of web infrastructure (docker/git)
  - to leverage various Apache modules within projects
- Redesign Senior Design for both CIT and COMP students
  - to incorporate Google Venture Sprints
  - to infuse Agile methodology
  - to adopt a DevOps approach with cross-discipline teams

Director / Matador Emerging Technology and Arts Laboratory 11/2013 - 6/2019
California State University, Northridge

Via the reorganization of three units within Academic Affairs, established the META+LAB to further support the University's student success priority. We modeled a high-tech startup company that provided hands-on experience to emerging technologies within an interdisciplinary environment.

Within 4 years, the META+LAB was transformed from a staff-centric to student-centric environment that continued to fulfill all its inherited responsibilities within its original budget, but with the additive benefits of accelerating student success and establishing a workforce development program.

- Developed META+LAB organizational structure utilizing student-based Agile teams with staff mentors.
- Primary Architect of our Web Services API: https://api.metalab.csun.edu
- Mentored team members in the development of web and mobile apps, which are still in use at CSUN:
  - Electronic Thesis and Dissertation

    - Faculty Profiles, Scholarship, and Stories
    - CalStatePays (based upon the Learn&Earn app)
    - Upper Division Writing Proficiency Exam
- Mentored team members in IT Infrastructure maintenance
    - META+LAB was 100% responsible for its IT needs
    - On-premise virtualization environment
    - Cloud-based environment hosted at AWS
- Deployed and maintained production Tableau environment
- Established multi-disciplinary, campus-wide training programs
    - Adventures (high school internship at META+LAB)
    - Pathfinders (year-long training program)
    - Immersive (2-week bootcamp training program)
    - Senior Design Sprints (1-week Google Venture Sprint program)
    - Amazon web-services certification course

Vice President, Technical Services / Eucalyptus Systems 1/2010 - 1/2013

- Built an integrated team from zero to 14 to serve three main company responsibilities:
    - Customer success and community support providing world-wide 24x7 coverage
    - Technological infrastructure and Community Cloud services
    - Web marketing activities, in coordination with marketing team
- Managed the Eucalyptus Customer and Eucalyptus Community clouds
- Developed the Customer Success Initiative with the VP, Prof. Services
- Established company policies and procedures regarding IT and business-related activities, including:
    - employee onboarding/termination processes
    - data center projects for engineering environments
    - aiding in the development of internal collaborative environments between customer success and engineering teams

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Chief Technology Officer / CSUN 6/2001 - 1/2007

- Advised both the CIO and other campus leaders to define and manage the IT infrastructure to meet the academic and business needs of the campus.
- Established priorities, via a consultative process, on policy development, organizational design, budget development, and staff hiring and supervision.
- Provided oversight and expertise in IT-related activities both within the IT Division and within individual colleges and business units.
- Directly responsible for:
    - IT standards and policies: development and implementation
    - Management of IT security and FISMA audits and findings
    - Directory Initiative for authentication via single sign-on (SSO) and for server and desktop computer management
    - Computer Security Incident Response Team (CSIRT)
    - Root Cause Analysis and Process Improvement

Additional Professional Experience

Director / Advancing Technology Laboratory
JULY 2019 - AUG 2021

- Managed a research- and exploratory- Sandbox IT Environment
- Oversaw the maintenance and support of CalStatePays.org
- Consulted with CSUN Institutional Research on their cloud-based Tableau environment
- Provided oversight to the student-led and student-managed computing environments, which includes:
    - On-premise virtualization environment
    - Cloud-based computing environment
- Managed the Amazon web-services certification course

Director / Pioneering Technology Group, California State University, Northridge
APRIL 2007 - DECEMBER 2009, January 2013 - November 2013

- Provided technical expertise and advice to the Provost in areas related to Academic Technology and Emerging Technologies.
- Served on numerous Academic and IT Governance Committees
  Academic Technology Leadership Team
  Technical Infrastructure and Services Committee (TISC)
  Classroom Technology Committee
  Academic Affairs Web Architecture Committee
  Academic Affairs Web Steering Committee
  Digital Dossier Steering Committee
- Spearheaded various experimental and innovative initiatives that later were adopted by the University, including:
    - Google Collaborative Suite for students
    - LMS assessment and selection process
    - Hybrid course redesign
    - Electronic Thesis and Dissertation (ETD) System
- Served on various committees to recommend standards and approaches, for example:
    - Uniform Resource Locators (URLs) for CSUN Web Sites
    - Learning Objects
- Experimentation with technologies prior to enterprise consideration, e.g.,
    - Email Services and other collaboration tools
    - Thin clients for Math Collaboratory and classroom computers

Information Security Officer / California State University, Northridge
JANUARY 2001 - JUNE 2001 (Faculty Release Time)

- Served as a liaison between the administration and faculty on IT security matters
- Advised the CIO on policies, technologies, and processes to improve IT security
- Proposed and developed policies that balanced academic needs and IT security
- Participated in security and FISMA audits

Faculty Researcher & Director / Northridge Computational Center, CSUN
DECEMBER 1998 - JUNE 2001

- Managed: 32-node HP V-class and 16-node SGI Origin Supercomputer
- Developed: Beowulf cluster to support student research projects
- Transitioned the center to Information Technology Resources

Computer Scientist / Information Sciences Institute, USC
DECEMBER 1996 - JANUARY 1999

- Member of the Globus Project, which coined the term “Grid Computing” and developed the first Grid Computing Infrastructure
- Responsible for the design, software development, and deployment of the MDS: Meta-computing Directory Service
- Responsible for the establishment of GUSTO, a computational grid that include 3,000 data processors distributed world-wide
- Founding member of the Global Grid Forum and first co-chair of the Information Services Working Group

Faculty Researcher / Lawrence Livermore National Laboratory
SUMMER 1995

- Member of the SISAL project, a high-performance computing language
- Implemented various optimization strategies within the SISAL compiler

Research Highlights:

- Top 20 Papers in 20 Years: High Performance and Distributed Computing have two papers selected:
    - Grid Information Services for Distributed Resource Sharing
    - Application Experiences with the Globus Toolkit
- Previously held the world record for the "Largest, distributed, interactive simulation" (1998).
- Received "Best of Show" award at the 1998 Super Computing Conference for most innovative wide-area application on a "Computational Grid".

Received "Meritorious Service Award" from the University of Southern California for demonstrating the largest "Computational Grid" (1997), which included over 3,000 data processors spread throughout in the U.S and Europe

Peer-Reviewed Publications

- Altman, E., Fitzgerald, S., Messick, U., Rink K., Vigna, K., Weiss, A., Wiegley, J., ETD: An Electronic Thesis and Dissertation Publication System, *USETDA (Electronic Thesis and Dissertation) 2013 Conference, July 2013*.
- Fitzgerald, S., Moulton, R., and Weyandt, S., Abandoned Processes and Orphaned Servers: Lessons Learned and Applied on the Frontline, *Educause 2007 Security Professionals Conference*, Apr. 2007.
- Fitzgerald, S., Directory Initiative at CSUN, *Secure Identity Management Initiative (SIMI) Workshop*, California State University System, July 2004.
- von Laszewski, G., Helm, M., Fitzgerald, S., Vanderbilt, P., Didier, B., Lane, P., and Swany, M., GOSv3: A Data Definition Language for Grid Information Services, Grid Forum Information Working Group, GWD-GIS-011-5, Feb. 2002.
- Czajkowski, K., Fitzgerald, S., Foster, I., Kesselman., C., Grid Information Services for Distributed Resource Sharing, Proceedings of the Tenth IEEE International Symposium on High-Performance Distributed Computing (HPDC-10), August 2001. [Top 20 in 20 HPDC-20.]
- Brunett, S., Czajkowski, K., Fitzgerald, R., Foster, I., Johnson, A., Kesselman, C., Leigh, J., and Tuecke, S., Application Experiences with the Globus Toolkit, Proceedings of the Seventh IEEE Symposium on High Performance Distributed Computing, Aug. 1998. [Top 20 in 20 HPDC-20.]
- Fitzgerald, S., Foster, I., Kesselman, C., von Laszewski, G., Smith, W., and Tuecke, S., A Directory Service for Configuring High-Performance Distributed Computations, Proceedings of the Sixth IEEE Symposium on High-Performance Distributed Computing, Aug. 1997.
- Fitzgerald, S., and Oldehoeft, R., Update-in-place Analysis for True Multidimensional Arrays, Journal of Scientific Programming, Apr. 1996.
- Krintz, C., and Fitzgerald, S., AGAVE: A Visualization Tool for Parallel Programming, *IASTED – ISMM International Conference on Parallel and Distributed Computing and Systems}*, Washington D.C., Oct. 1995.
- Fitzgerald, S., and Oldehoeft, R., Update-in-place Analysis for True Multidimensional Arrays, *High Performance Functional Computing (HPFC) Conference*, Colorado, Apr. 1995.
- Fitzgerald, S., Smith, S., and Canning, J., A Graph Transformation Technique To Exploit Memory Reuse, *IASTED – ISMM International Conference on Parallel and Distributed Computing and Systems*, Washington D.C., Oct.1994.
- Fitzgerald, S., Hafeez, A., and Smith, S., A User-Transparent `Parallel Virtual Machine' (UPVM), *PVM User's and Developers Workshop*, Tennessee, May 1994.
- Fitzgerald, S., Increasing Parallelism for an Optimization that Reduces Copying in IF2 graphs, *Proceedings of the Third Annual SISAL Users and Developers Conference*, LLNL TR CONF-9310206, Oct. 1993.
- Fitzgerald, S., Copy Elimination for True Multidimensional Arrays in SISAL 2.0, *Proceedings of the Third Annual SISAL Users and Developers Conference*, LLNL TR CONF-9310206, Oct. 1993.
- Hatfield, D., Fitzgerald, S., and Miner, R., An Expression Language for the Specification and Implementation of Imaging Algorithms, *SPIE Conference – Image Processing and Interchange*, Jan. 1992.

Presentations, Workshops, and Tutorials

1. Fitzgerald, S., Miller, B., and Stephens, D., Creating a High Tech, High Touch High Impact Academic Laboratory, *SCUP Pacific Region Conference*, March 2016.
2. The Virtual University, *Provost Professional Development Series*, February 2008
3. Fitzgerald, S., Email Survey: Focused on Students, *First CSU Systems Technology Alliance (STA)*, March 2007.
4. Fitzgerald, S., Email Support and Spam Controls for an Academic Setting, Mirapoint Higher Education Symposium, Jan. 2004.
5. Fitzgerald, S., Security in the MDS, *NASA Ames Research Center*. Sept. 2000.
6. Backes, M., and Fitzgerald, S., An Information Service for Storage Systems and File Information, *Information Services Workshop*, NASA Ames Research Center, Sept. 2000.
7. Swany, S., Fitzgerald, S., and Wolski, R., Information-Service Architecture for Dynamic Information, *Information Services Workshop*, NASA Ames Research Center, Sept. 2000.
8. Fitzgerald, S., The New MDS, *Globus Retreat 2000*, Pittsburgh, PA, Aug. 2000.
9. Fitzgerald, S., Globus System Administration Tutorial, *Globus Retreat 2000*, Pittsburgh, PA, Aug. 2000.
10. Fitzgerald, S., Czajkowski, K., and Kesselman, C., Globus: Meta-computing Toolkit, *NPACI All Hands Meeting*, San Diego Supercomputing Center, San Diego, CA, Jan.1999.
11. Fitzgerald, S., Foster, I., Kesselman, C., and Tuecke, S., Globus: Meta-computing Toolkit, *Globus/NASA Information Power Grid (IPG)*, NASA Ames Research Center, Jan. 1999.
12. Fitzgerald, S., Globus System Administration Tutorial, *Globus/NASA Information Power Grid (IPG)*, NASA Ames Research Center, Jan. 1998.
13. Fitzgerald, S., Foster, I., Kesselman, C., and Tuecke, S., The Globus Grid Programming Toolkit: A Tutorial, *SC98: The International Conference of High-Performance Computing and Communications*, Nov. 1998.
14. Scofield, M., and Fitzgerald, S., Nexus Shared Memory Support, *The Second Annual Globus Retreat*, Oak Brook, IL, Aug. 1998.
15. Brunett, S., and Fitzgerald, S., SF Express: Distributed Interactive Simulation, *The Second Annual Globus Retreat*, Oak Brook, IL, Aug. 1998.
16. Fitzgerald, S., and von Laszewski, G., Globus Programming Tutorial, *The Seventh IEEE Symposium on High Performance Distributed Computing*, Chicago, IL, Aug. 1998.
17. Fitzgerald, S., Globus System Administration Tutorial, *The Second Annual Globus Retreat*, Oak Brook, IL, Aug. 1998.
18. Fitzgerald, S., Czajkowski, K., and Kesselman, C., Globus: Meta-computing Toolkit, *NPACI (National Partnership for the Advancement of Computational Infrastructure) Tutorial Series*, San Diego Supercomputing Center, San Diego, CA, Jul. 1998
19. Fitzgerald, S., Information Services, *Third Semi-Annual Globus Meeting*, Chicago IL, June 1997
20. Skochinski, E., Fitzgerald, S., and Rengaragjan, S., Parallelization of Method of Moments Code, *Lawrence Livermore National Laboratory*, Aug. 1995.
21. Fitzgerald, S., Imaging Application Expression Language, *Computer Science Speaker Series*, Wang Laboratories, Lowell, MA, Oct. 1992.

Selected Research Grants and Contracts

1. A Curriculum-based High Impact Practice (Year 3 Funding), Advancing Tech Lab, Co-PI, $45,000, June 2021.
2. A Curriculum-based High Impact Practice (Year 2 Funding), Advancing Tech Lab, Co-PI, $146,000 June 2020.
3. Advancing Technology Laboratory: A Curriculum-based High Impact Practice, Computer Science, Co-Pi, $160,000, June 2019.
4. Development of the IMS (Internal Management System), Official Police Garages, META+LAB, Director, $98,000, May. 2015.
5. Support for the MDS Distributed Infrastructure, University of Southern California, Fitzgerald, S., PI, $125.000, Jan. 2001.
6. Support for the MDS Distributed Infrastructure, University of Southern California, Stepanek, S., PI and Fitzgerald, S., Co-PI, $65,000, Apr. 2000.
7. Grant to support the Northridge Computational Center, Lockheed Martin Skunk Works, Fitzgerald S., PI, $100,000, Apr. 2000 and Feb. 1999.
8. Partnership Agreement between Lockheed Martin Skunk Works and Northridge Computational Center, Lockheed Martin Skunk Works, Fitzgerald S., PI, $190,530, Dec. 1998.
9. Resource Request for an ATM Switching Module, College of Engineering and Computer Science Research Grant, Fitzgerald, S., and Kim., J., CoPIs, $5,000, Oct. 1996.
10. Scalable Implementation of Out-of-Core Linear Solvers for Distributed-Memory, Message-Passing Architectures, Lockheed Martin, Skunk Works, Fitzgerald, S., PI, $14,000, June 1996.