Jayson M. Harshbarger

- **Citizenship:** United States of America
- **Japanese Visa Status:** Current Researcher Visa
- **Current Address:** Tokyo, Japan

PROFILE

Areas of experience include scientific computing, visualization, and simulations. Looking to expand my knowledge in the fields of scientific computing and visualization. I am passionate about creating and using software and web systems as a tool to enable analysis, management, and efficient sharing of scientific data across broad scientific fields. I am passionate about using and developing open-source software.

RELEVANT SKILLS

- Advanced physics and mathematics skills.
- Advanced computer skills in both the PC and Unix/Linux.
- Many years of computer programming experience across multiple languages including: C++, FORTRAN, Visual Basic, and Java.
- Many years of experience with web development. Knowledgeable in server side programming using PHP, node.js, and MySQL. Advanced understanding of HTML, CSS, and JavaScript. Experienced with angularjs, jQuery, and d3js.
- Advanced experience with, and strong advocate of, version control systems such as git and github. Github user Hypercubed (https://github.com/Hypercubed) with over 30 public repositories. Contributor to various open source projects including AngularJS, DocPad, and Semantic MediaWiki. Passionate about open source software.
- Advanced skills using CAD tools including AutoCAD, ProE, CATIA, and Patran.
- Experienced in genomic analysis on large datasets using R, perl, and bioinformatics command line tools such as bamtool and bedtools.
- Proven ability to deliver under critical time constraints.
- Beginning level Japanese.

PROFESSIONAL EXPERIENCE

RIKEN Center for Life Science Technologies, Division of Genomic Technologies, 2011 - Present

Technical Scientist / Web Visualization Development

- Designed and developed various web sites and web applications in support of a large international consortium research project including the consortium website (http://fantom.gsc.riken.jp).
- Developed web applications for retrieval and visualization of large genomic datasets using node.js, d3js and angularjs .
- Performed bioinformatic analysis of deepCAGE sequencing on RNA isolated from human and mouse samples.
- Contributed to the code base of a powerful web based scientific collaborations, data integration, and omics visualization tool.
- Contributed to and co-authored several publications.

Boeing S&IS / El Segundo, 2000 - 2011

Senior Scientist / Survivability Engineering

- Developed in-depth understanding of space environment effects and knowledge across broad scientific topics such as molecular gas dynamic, diffusion, sublimation, thin film optics, radiation, and plasma physics.
- Responsible for modeling of contamination on satellite optical systems due to molecular and particulate contamination, plume impingement of electric and liquid propulsion systems, and evaluation of gas flow within complex vessel for susceptibility to multipaction.
- Responsible for statistical analysis of spacecraft reliability under the influence of micro-meteoroid bombardment.
- Researched and developed various scientific analysis applications including best in industry simulation tools for modeling of molecular gas dynamics in collision-less environments and semi-empirical simulation of the effects of electric and liquid thruster plume impingement.
- Developed expert knowledge in various engineering tools such as Thermal Desktop (CAD Based Thermal Modeler), COMSOL (Multiphysics Modeler), and FilmStar (thin film optics software). Tested and implemented new tools such as thermal modeling software, multiphysics tool for diffusion modeling, and thin film optics software for modeling of contamination effects.
- Responsible for improvement of contamination engineering standard processes including leading a multi-year project to improve enterprise wide process for control of outgassing materials.
- Designed, procured, and analyzed various extensive laboratory experiments in support of empirical model development in the areas of thin film deposition including surface sputtering and ultraviolet deposition within high vacuum systems.
- Heavy involvement in anomaly investigation teams under critical time constraints.

UCLA, Center for High Frequency Electronics, 1996 - 2000

Assistant Engineer

- Responsible for general laboratory duties, maintenance of laboratory hardware, and assisting graduate level researchers, school faculty, and industry researchers in various research projects.
- Developed various software tools for laboratory management.
- Developed an in-depth understanding of high frequency electronics including network analysis of microwave devices and circuits up to 105 GHz.

Ventura College Chemistry Department, 1993 – 1996

Laboratory Assistant

- Responsible for general laboratory duties, maintenance of laboratory equipment, and assisting faculty in conduction of in-class experiments.
- Developed various software tools for laboratory management.

PUBLICATIONS

- The FANTOM Consortium and the RIKEN PMI and CLST (DGT) (2014). A promoter level mammalian expression atlas. *Nature* **507**, 462–470
- Jessica Severin, Marina Lizio, **Jayson Harshbarger**, Hideya Kawaji, Carsten O Daub, Yoshihide Hayashizaki, The FANTOM Consortium, Nicolas Bertin, Alistair R R Forrest (2014). Interactive visualization and analysis of large-scale NGS data-sets using ZENBU. *Nature Biotechnology* **32**, 217–219
- Marina Lizio, **Jayson Harshbarger**, et. al., Gateways to the FANTOM5 promoter level mammalian expression atlas. *Genome Biology* (accepted)

EDUCATION

University of California, Los Angeles, 1996 - 1999

Bachelors of Science in Physics

Graduated with a 3.40 GPA. Attended classes while working as an Assistant Engineer in the Electrical Engineering Department. In addition to core requirements attended courses on microbiology, biotechnology, and biophysics.

University of Southern California, 2002/2006

Attended individual class on C++ programming and rarefied gas dynamics. Attended class on computational methods in rarefied gas dynamics. Studied Direct Simulation Monte Carlo/Particle-in-Cell codes. Developed a 2D DSMC code as a term project.

El Camino Community College, 2011

Attended Japanese language classes