CARLYN LEE

EXPERIENCE

Jet Propulsion Laboratory, California Institute of Technology August 2012 - Present
Applications Software Engineer *Pasadena, CA*

- Code audit and testing of multi-agent maritime autonomy software for unmanned surface vehicles. Investigated race conditions in asynchronous engine operations from analysis of CAN messages.
- Trade studies and implementation of radio mesh network in mining tunnel. Enabled collaborative autonomous agent capabilities and improved localization in tunnel environment for DARPA's Subterranean Challenge.
- Architected data systems for COTS dashboards to explore aggregated data and event anomalies flagged by rules-engine, Event Verification Records & Engineering Housekeeping, and Accountability data. e.g. Tableau & Web Data Connectors, Kibana.
- Implemented framework for Link Complexity and Maintenance software to query events or trends from Sequence of Events files and estimate a link complexity profile.
- Telecom forecast prediction tools for various deep space missions, including full web stack development for SaaS application prototype. Implementation of network link models. Spacecraft, planetary, camera-matrix, and events analysis using C/C++. UX development for scheduling telecom links, e.g. Liferay portlet, Drupal, D3, WebGL.
- Modeling of communications traffic flow for human exploration of Mars & Moon. Python implementation of Markov model for estimating bandwidth requirements in Deep Space Network simulations.
- Radio science operator for Cassini Spacecraft. Investigation of atmospheric losses for 32GHz radio communications recorded on Deep Space Network open & closed loop receivers. Prototyped data warehouse for quick visualization of radio science data from Cassini Spacecraft during 2004-2015.

Spectral Imaging Laboratory November 2011 - Present
Consultant *Pasadena, CA*

- Post-processing algorithm to correct for manufacturing inconsistencies in prototype of artificial compound eye.
- Application of super resolution algorithms to ray-traced simulations of images captured with artificial compound eyes. Using Matlab and openCV, improved resolution of images degraded with noise models.
- Modeling of visual acuity for multiple apertures on curved surface. Implementation of neural networks to improve angular resolution of a point light source.

California State University, Fullerton December 2009 - August 2012
Research Assistant & Intern *Fullerton, CA*

- Designed and implemented framework to improve run-time efficiency & accuracy of cancer detection using eigen decomposition of DNA microarray data with large feature set.
- Implemented framework to explore next generation sequencing alignment techniques for discovering binding sites in heat-shock proteins, integration of C/C++ self-organizing maps.
- Delivered scheduling tool for library resources using .NET framework. C# student web application, VB.NET admin configuration tool. Database design & implementation using SQL Server & stored procedures.

EXTRACURRICULAR, VOLUNTEER & PROFESSIONAL AFFILIATIONS

Interplanetary Small Satellite Conference Committee; Caltech Alpine Club Website Administrator; Private Pilot-ASEL +300hrs including instruction in PA28, C152, C172, CT210M; Technician Class Amateur Radio Operator
2019 Member of Duarte Ad Hoc Finance Advisory Committee, appointed by Duarte City Council to review the City's existing revenues, expenditures and future financial forecast, discuss possible cost containment measures and revenue enhancements.
2010 - 2012 Vice-President of Association for Computing Machinery, CSU Fullerton.

AWARDS & HONORS

2015 3rd place Topcoder Open Finals API Hackathon.
2013 1st place Biotech Track, 15th Annual IEEE Biomedical Engineering Biotech Contest.
2012 Anita Borg Scholarship, CSUPERB Travel Grant, Orange County Outstanding Engineering Student Award.

EDUCATION

California State University, Fullerton

M.S. Computer Science — *August 2012*

B.S. Computer Science, Minor in Mathematics — *July 2011*

PUBLICATIONS

D. Abraham, B. MacNeal, D. Heckman, Y. Chen, J. Wu, K. Tran, A. Kwok and C. Lee. Recommendations Emerging from an Analysis of NASA's Deep Space Communications Capacity. In International Conference On Space Operations (SpaceOps 2018), Marseille, France, May 2018.

J. Lad, M. Johnston, D. Tran, D. Brown, K. Roffo, C. Lee. Complexity-Based Link Assignment for NASA's Deep Space Network for Follow-the-Sun Operations. In International Conference On Space Operations (SpaceOps 2018), Marseille, France, May 2018.

K. Pinover, M. Johnston, C. Lee. Optimizing SmallSat Scheduling for NASA's Deep Space Network. In International Workshop on Planning and Scheduling for Space (IWPSS 2017). Pittsburgh, PA, June 2017.

D. Morabito, D. Kahan, K. Oudrhiri, and C. Lee. Cassini Downlink Ka-Band Carrier Signal Analysis. The Interplanetary Network Progress Report, Volume 42-208, February 15, 2017.

K. Cheung, D. Abraham, M. Sanchez-Net, K. Tran, C. Lee. Traffic modeling for Deep Space Network in the Human Exploration Era. In SpaceOps 2016 Conference, Daejeon, Korea, May 16-20, 2016.

M. Johnston, C. Lee, C. Lau, K. Cheung, M. Levesque, B. Carruth, A. Coffman, M. Wallace. Integrating space communication network capabilities via web portal technologies. In SpaceOps 2014 13th International Conference on Space Operations, Pasadena, California, May 5-9, 2014.

C. Lee, C.H. Lee. Cancer Screening Using Multi-modal Differential Principal Orthogonal Decomposition. In 2013 13th International Conference on Computational Science and Its Applications, Ho Chi Minh City, Vietnam, June 24-27 2013.

C. Lee. Rest architecture for link analysis tools portal. NASA Undergraduate Student Research Program (USRP), Pasadena, California, August 2011.