

Spencer John Frazier
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Summary

Lockheed Martin Senior (Lead) Software Engineer, Human-Machine Teaming Researcher, Architect and Leader

- Researcher with multiple multi-agent systems, human computation, virtual agent/avatar and machine learning publications/co-authorships. Conference presentations/attendance (AAAI/AAMAS/AIIDE/IITSEC/SeriousPlay). Currently interested in RNNs/LSTM and compositional networks for zero-shot learning.
- Leader with roles as CTO, senior lead engineer, architect, designer, author, and community head for 15 years
- Deployed 7 App-Store published applications including Drizly (delivery service app), PaintMatch+, video recording and sending app, social questions app, ID scanning tool and a human computation game. 8 years dev experience.
- Designer with UI/UX experience - directed visual design of every application I've shipped
- Entrepreneur with 1 funded startup and design/development/consulting involvement with many more

Education

(Indefinite Hiatus) PhD in Computer Science, Started August 2013
Georgia Institute of Technology, College of Computing; Atlanta, GA
Advisor: Mark Riedl (Entertainment Intelligence Lab)

Masters in Computer Science (CSCI), Graduated December 2012
University of Southern California, Viterbi School of Engineering; Los Angeles, CA
Advisors: Rajiv Maheswaran and Yu-Han Chang (ISI - Computational Behavior Group)

Bachelors in Computer Science, Bachelors in Communications, Minor in Philosophy, Class of 2011
Boston College, College of Arts and Sciences; Chestnut Hill, MA
Advisor: Stella X Yu (Now at UC Berkeley)

Work Experience

Lockheed Martin

Senior (Lead) Software Engineer (ATLP Sr) (Under Suraiya Suliman suraiya.h.suliman@lmco.com)
June 2014 - Present

Engineering: Designed architecture and implemented containerized microservice distributed system "GIMBAL" for human performance data collection and assessment using Tobii (Python/OpenCV/GStreamer), fNIR and many other hardware sensors. Managed system integration for year-end AFRL demo integrating Prepar3D (internal warsim tool), flight simulators, AR weapon platform and UAV analyst feeds. Developed geospatial mapping capabilities and fixed multi-platform browser compatibility for LMCO/ONR tactical decision kit in one day. Wrote multiple installers with WIX. Contributed significantly to the Mars Game and Virtual World Framework open source initiatives by writing drivers, scenario behaviors, developing trigger system, extending Google Blockly and developing a scenario generation tool. (<https://github.com/virtual-world-framework/mars-game>). Top 10% engineer in yearly evaluations.

Architecture and Leadership: Worked closely with Yale Emotional Intelligence lab and Air Force Research Labs to design a virtual avatar simulation and biophysical monitoring research study for UAV Analysts called SARSIM. Authored Financial Readiness Machine Learning proposal for ADL/DoD in collaboration with StandardsWork and and co-authored recent PROTEUS proposal award at 7-8 figure cost estimates. Current design/architecture/engineering co-leader for PROTEUS. Advanced Technical Leadership Class of 2019. Engineering lead and software architect in a team of 4, successfully conducted research study involving SARSIM at TechWarrior 2016 in September 2016 - a key yearly milestone for my Primary Investigator's Lab. Presenter at SeriousPlay. Co-author/co-presenter of research paper @ IITSEC 2015. Worked with educational researchers (ADL) and NASA to run a school competition using Mars Game. Provided sole devops support and server management/application deployment on the GENI network. Hold coding interviews and advise on hiring decisions. Transitioned multiple internal "Destination Innovation" research proposals to active programs. Delivered recruitment talks at Boston-area schools -including MIT- on distributed systems and human-machine trust. Managed office intern program in the summers of 2015, 2016, 2017 and 2018

Everyday Tools: Python/JavaScript/C++/Docker/Tensorflow/Keras/Weka/GIT/Rhapsody/Enterprise Architect

Entertainment Intelligence Lab - Georgia Tech
Graduate Research Assistant (Under Mark Riedl riedl@cc.gatech.edu)
August 2013 - June 2014

Research assistant concerned with examining agent behavior, agent modeling, proactive sensing, GWAPs, machine learning and narrative generation. Built research-oriented mobile applications on Google Glass, iOS and Android devices. Primarily tasked with programming mobile game test clients, backends and services, organizing tests and writing research papers.

Everyday Tools: Objective-C/Java/Google Glass/PHP/AWS EC2/AWS S3/AWS ELB/LaTeX

Drizly Inc
Co-Founder, CTO
July 2012 - December 2013

Designed, developed and programmed a mobile customer/merchant/distribution platform and consumer facing application in 3 months. Currently used by hundreds of liquor stores and thousands of drivers in dozens of states. Executed infrastructure and scaling transition in 1 day with 2 engineers. Managed 2 total engineers. Efforts enabled Drizly to raise a 6 million pre-money, 9 million post-money funding round December 2013. Drizly has subsequently raised 30 million dollars of funding and is available nationally. Integrated with POS systems.

Everyday Tools: Objective-C/Java/PHP/AWS

Information Sciences Institute - USC - Computational Behavior Group
Research Assistant (Under Rajiv Maheswaran and Yu-Han Chang)
September 2011 - December 2012

Research assistant concerned with examining agent behavior, agent modeling, decision support agents, cooperative, collaborative and competitive scenarios with MDPs. Direct product development of mobile applications in Objective-C, Java and Google Web Toolkit. Produced ZombieSC managing a large team of other students. Attended AAMAS 2012 in Spain to demonstrate a live demo of designed and developed location-based cooperative mobile game, Team-It. Notable paper in AIIDE 2012 comparing virtual immersive agent interaction to real world collaboration and negotiation behaviors. Primarily tasked with programming mobile game test clients and services, organizing studies and writing research papers. (Also worked with university police to develop a safety mobile application). Oversaw 2 undergraduate research projects.

Everyday Tools: Objective-C/PHP/GWT/Weka/AWS/R/LaTeX

Selected Research Publications, Demonstrations & Patents

Technological architecture to enable state awareness of human collaborators in human-autonomy teams

Spencer Frazier, Patrick Craven and Kevin Oden
AHFE 2018

Federated Learning on Homomorphically Encrypted Machine Learning Models

Spencer Frazier
Lockheed Fellows Conference 2018 - Poster

Mars Game: Creating and Evaluating an Engaging Educational Game (15105)

Kevin Dill, Spencer Frazier, Barbara Freeman Ed.D., Juan Benito
IITSEC 2016 - Full Paper

Persistent and Pervasive Real-World Sensing using Games

Spencer Frazier and Mark O. Riedl
Proceedings of the 2nd AAAI Conference on Human Computation (AAAI 2014) - Workshop Paper

Team-It : Location-Based Gaming in Real and Virtual Environments

Spencer Frazier, Alex Newnan, Fotos Frangoudes, Yu-Han Chang and Rajiv Maheswaran
AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE 2012) -Full Paper

Team-It

Spencer Frazier, Alex Newnan, Yu-Han Chang and Rajiv Maheswaran
International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2012) -Live Demo and Poster

Patents: US20140279516 - Authenticating a Physical Device (pending), US20150186963 - Distribution of Products (pending), US20140201100 - Confirmation of Identity (pending), Computer Vision Related Patent (passed IPRB), Hardware/AR Computer Vision Related Patent (passed IPRB)