Steven C. Dang

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Summary

- I am a **learning engineer** with **18 years** of experience.
- I have built analytics using machine learning to **measure student motivations and learning** using log data
- I have **designed, built, and evaluated instructional technology** with experimental and causal statistical methods

Education

Ph.D. in Computer Science, Carnegie Mellon University	*Pittsburgh, PA*	expected-2021
M. of Ed Tech and Applied Learning Sciences, Carnegie Mellon University	*Pittsburgh, PA*	2015
B.S. in Electrical Engineering, Georgia Institute of Technology	*Atlanta, GA, USA*	2007

Skills

Learner Modeling	Engagement Modeling, Psychometrics, Cognitive Modeling, Collaborative Learning
Learning Design	Adaptive Learning, Domain Model Refinement, E-Learning Design, Instructional Design
Research Methods	Computational Modeling, Behavioral Experiments, Design-based Research, Quantitative Ethnography
Statistical Methods	Regression, Causal Estimation, Bayesian Inference, Multi-level Models, Mixture Models, Ensemble Methods
Programming Technologies	AWS, Spark, Docker, Kubernetes, Git CI/CD, Node, NGINX, MySQL, MongoDB, Linux
Programming Languages	Python, R, Stata, SQL, Javascript (ES6), HTML5, CSS3, Java, C, Objective C
Software Libraries	Pandas, Numpy, Scipy, Sklearn, SimPy, RabbitMQ, plot.ly, bokeh, PyMongo, Flask, LME4, Angular 2, React, Meteor

Relevant Projects

Discovery of Item-based Measures of Student Motivation (Dissertation), 2020-2021
- Develop method for automatically identifying behavioral indicators of motivational constructs
- Demonstrate ability to differentiate confounding motivational factors from log data

Live Measurement of Student Motivations, 2015-2020
- Demonstrated how characteristics of when particular student behaviors occur can be leveraged as indicators of latent student motivations
- Showed utility of task-switching and ego-depletion theory to predict trends in when learners partially/fully disengage
- Improved reliability of student diligence estimation using social information embedded in log data
- Adapted psychometric behavioral task measures to context of tutor log data

Personalizing Learning through Motivation and Cognition Support, 2018-2020
- Conducted focus groups identifying social and resource constraints that interfered with dashboard use as originally design
- Improved analytics to differentiate low-engagement high-performers

Sharesight: Re-designing Soft-skills education for First-line Managers, 2015
- Used UX research methods to identify and validate learners desire for more detailed examples of course principles in action
- Iterated 4 prototypes to explore viability of crowd-sourced learning content

Leveraging Socio-Cultural Intelligence in Mobile Decision Support Systems for Warfighters, 2008-2011
- Lead Architect for Service-oriented architecture for on-demand soft-power support for warfighters
- Led 4 geographically distributed teams development teams

Work Experience

PhD Student Researcher, Carnegie Mellon - LearnLab, Educational Data Mining and learner modeling	*Pittsburgh, PA*	2015-Pres
Research Programmer, Carnegie Mellon - Protolab, Crowd-sourcing Creativity	*Pittsburgh, PA*	2013-2015
Research Programmer, University of Maryland - Inst. Adv. Computer Studies, Large Scale Image Understanding	*College Park, MD*	2012-2013
Lead Software Engineer, Lockheed Martin - Internal R&D, mobile prototyping for military intelligence solutions	*Gaithersburgh, MD*	2007-2011
Robotics Instructor, University of New Orleans - Summer Scholars Program, Taught HS Students Intro to Robotics	*New Orleans, LA*	2004-2005
Robotics Instructor, GT RoboJackets - FIRST Robotics, Developed and taught after-school robotics course	*Atlanta, GA*	2004-2007

Selected Publications

[4] Steven **Dang** and Ken Koedinger. The ebb and flow of student engagement: Measuring motivation through temporal pattern of self-regulation. In *Proceedings of The 13th International Conference on Educational Data Mining*, pages 61–68. EDM2020, 2020

[3] Steven **Dang** and Ken Koedinger. Opportunities for human-ai collaborative tools to advance development of motivation analytics. In *Workshop on Learning Analytic Services to Support Personalized Learning Assessment at Scale at The 10th International Conference on Learning Analytics Knowledge*. LAK2020, 2020

[2] Steven **Dang** and Ken Koedinger. Exploring the link between motivations and gaming. In *Proceedings of The 12th International Conference on Educational Data Mining*, pages 276–281. EDM2019, 2019

[1] Steven **Dang** and Ken Koedinger. Detecting diligence with online behaviors on intelligent tutoring systems. In *Proceedings of the Fourth ACM Conference on Learning @ Scale*, pages 51–59. LS2017, 2017