

# James Foster

Ph.D. Candidate in Human & Machine Learning

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## Summary

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Scientist researching human and machine learning. Passion for building human-like artificial intelligence systems. Enjoys learning new technologies and analysis techniques for data-driven problem-solving. Multidisciplinary brainstormer who generates creative insights. Motivated to work on projects that benefit society.

## Technical Skills

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<b>Programming</b>	Python, R, Matlab, Java, Javascript/HTML, SQL, Spark
<b>Tools &amp; Technologies</b>	Pandas, scikit-learn, TensorFlow, NumPy, Jupyter, git, AWS, general linear model, lme4
<b>Techniques</b>	Machine Learning, Computational & Mathematical Modeling, Statistics, Experiment Design, Online Data Collection, Big Data, Visualization
<b>Selected Coursework</b>	Data Science, Machine Learning, Deep Neural Networks, Artificial Intelligence, Statistics, Natural Language Processing, Computational Semantics, Information Retrieval Systems, Research Methods, Math Modeling, Linear Algebra, Numerical Analysis, R, Decision Support Systems, Software Engineering, Technical Writing & Communication

## Education

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**Ph.D. in Cognitive Science & Neuroscience**, 2018 (expected)  
University of Colorado Boulder

**M.A. in Cognitive Psychology**, 2015  
University of Colorado Boulder

- Thesis: Analogical Reinforcement Learning

**B.S. in Computer Science Engineering**, 2009  
University of Florida

- Industrial Engineering Specialization
- GPA 3.97

## Data Science Experience

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**Data Scientist in Educational Technology**, 8/17 –  
Office of Information Technology, ASSETT Teaching and Learning Team  
University of Colorado Boulder

- Evaluated and presented data in a meaningful, effective manner to support data-driven decision making, as well as improving ASSETT's services to the CU community
- Advised faculty on the design and development of applied research projects to support teaching and learning
- Advanced key campus initiatives related to improving teaching and learning (building and developing assessment/observation protocols, conducting interviews and consults)
- Assessed university needs surrounding teaching with technology by assisting with development, distribution, analysis, and reporting of large-scale survey data

**Data Science Ph.D. Intern**, 5/17 –8/17  
Oracle Data Cloud: Broomfield, CO

- Implemented neural network models for big data predictive analytics (Python, Tensorflow, Keras, Spark)
- Created research framework for testing the effectiveness of different machine learning models for predicting human purchasing behavior and web usage (Python, scikit-learn, Jupyter, Docker, AWS/S3)
- Developed unified recurrent neural network model that needed fewer features to beat best existing individually hand-tuned production models

### **Data Analysis and Research Consultant, 8/16 –5/17**

Computer Laboratory for Instruction in Psychology Research  
University of Colorado Boulder

- Helped graduate students, post-docs, & faculty use technology to better conduct psychological research
- Developed customized data analysis methods and tools (statistical hypothesis testing and visualization in R, machine learning in Python, supercomputing with Matlab/Slurm/Bash)
- Provided consultation for experimental design and implementation, including laboratory and large-scale online data collection (Mechanical Turk, Psychopy, Javascript/HTML)

### **Data Science Team Competitions**

- Award for Creative Analysis, Oracle Data Cloud Audience Competition (Python, Vowpal Wabbit)
- Kaggle Participant: Movie Spoiler Detection, Rate My Professors, MNIST (Python, scikit-learn)

### **Professional Intern, Industrial Engineering, 5/06 – 8/06**

Walt Disney World: Lake Buena Vista, Florida

- Developed software tools to track inventory and increase efficiency of large-scale textile facilities (Excel, VBA, VB.Net)
- Identified bottlenecks and optimization areas in textile services

## **Research Experience**

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### **Graduate Research Assistant, Jones Lab, 6/11 –**

University of Colorado Boulder (Advisor: Matt Jones)

- Developed mathematical and computational models of reinforcement learning with relational representations and analogy to discover abstract patterns (schemas) in game-playing and natural language applications (Java, Matlab, R)
- Designed, implemented, and analyzed psychological experiments on relational concept learning and language processing (R, Matlab, Javascript/HTML, PsychoPy, E-Prime for EEG/ERP)

### **Research Assistant, Computational Language and Education Research, 8/09 – 5/11**

University of Colorado Boulder (Advisors: Tamara Sumner, James Martin)

- Designed and implemented ontology creation software for concept-linking and clustering (Java, Lucene, OpenNLP tools)
- Led expert annotation study to collect machine learning training data for automatically identifying core educational concepts (Javascript/HTML)
- Developed, coded, and analyzed structured interviews with teachers to assess their technological, pedagogical, and content knowledge (R, Atlas.ti)

**Research Advisees:** Jacob Parelman, 2015; Adam Szyszko, 2015; Alexandre Apfel, 2013

## **Teaching Experience**

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### **Lead Graduate Teaching Assistant for the Department of Psychology & Neuroscience, 8/14-5/16**

University of Colorado Boulder

- Led workshops on teaching statistics and research methods
- Consulted with graduate students to improve their teaching practices

### **Graduate Teaching Assistant, University of Colorado Boulder**

- Statistics and Research Methods: Fall 2012, Fall 2013, Spring 2015
- Introductory Cognitive Psychology: Fall 2014
- Developmental Psychology: Spring 2014

### **Teaching Assistant, University of Florida**

- Computer Programming for Engineers: Fall 2006, Spring 2007