Elijah Mayfield

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EDUCATION

Ph.D. Language and Information Technology   *In Progress*

M.S. Language Technology   **2011**
Language Technologies Institute, School of Computer Science, Carnegie Mellon University
Advisor: Carolyn Penstein Rosé

B.A. Computer Science with Honors   **2009**
University of Minnesota, Morris

PROFESSIONAL EXPERIENCE

LightSIDE Labs, Pittsburgh, PA   **2013-Present**
Founder, President, CEO: Developing software platforms for automated grading, assessment, and feedback for student writing. Seeking out funding opportunities and raising awareness from potential partners and users. Coordinating with numerous businesses, universities, and research organizations in both existing and proposed future educational technology. Evangelism for machine learning as an applied solution to major education challenges.

Carnegie Mellon University, Pittsburgh, PA   **2009-Present**
Research Assistant: Studying social positioning in conversation and dialogue, inspired by sociolinguistic theories especially connected to systemic functional linguistics. Exploring ways of transferring insight from the social sciences into empirical research with a focus on machine learning and natural language processing, studying a variety of phenomena in healthcare discussions and collaborative learning.

The College Board, Reston, VA   **2012-Present**
Research Consultant: Briefing internal team members on machine learning technologies for essay scoring and the current state of the art in natural language processing and its application to educational technology. Reviewing proposed future item and test design and identifying areas of application for automated scoring. Proposing and initiating research in potential areas of interest for future work. Describing proof-of-concept systems and exploring the feasibility of their implementation at large scale.

IBM TJ Watson Research Center, Hawthorne, NY: **2012**
Research Intern: Studying user authoritativeness and expertise in social question answering environments. Understanding the difference in behavior between individuals and members of corporate teams. Describing and developing dimensions of authoritativeness and the linguistic indicators by which they are expressed. Developing machine learning algorithms to facilitate automated discovery of expertise in enterprise question answering systems.

Worth Publishers   **2011**
Research Consultant: Briefing internal team members on machine learning technologies for student assessment and the current state of the art in natural language processing. Propose and develop a system for automated assessment of student essays using machine learning.

Digikey Corporation   **2008**
Software Engineering Intern

PRAISE FOR LIGHTSIDE LABS

Project Olympus Spark Grant   **April 2013**
Award for innovative startups emerging from Carnegie Mellon University ($3,000)

Three Rivers Venture Fair Technology Showcase – 2nd Place   **April 2013**
"Shark Tank" entrepreneurship event for startups from Carnegie Mellon and the University of Pittsburgh held concurrently with the region's top venture capitalism event ($1,500)

Project Olympus PROBE   **February 2013**
Competitive accelerator for Carnegie Mellon University, providing business advice to new entrepreneurs with strong startup concepts or existing products from research.

AWARDS

IBM Ph.D. Fellowship   **2013**
Intensely competitive, worldwide program for exceptional Ph.D. students in many academic disciplines.

Siebel Scholarship   **2011**
Awarded annually for academic and leadership excellence to 80 students from the world's leading graduate schools ($35,000)

McCree Award for Mathematical and Computer Sciences   **2009**
Scholar of the College   **2009**
Undergraduate Research Opportunities Program   **2008**
Grant-in-Aid Student Research   **2007**
Dean's List   **2006-2009**
Awarded for research and academic excellence at the University of Minnesota, Morris

PUBLICATIONS
(J) Journal Article (C) Conference Paper (L) Less Selective Workshop/Poster/Short Paper (B) Book Chapter

Recognizing Rare Social Phenomena in Conversation: Empowerment Detection in Support Group Chatrooms (C)
Elijah Mayfield, David Adamson, and Carolyn Penstein Rosé
To appear in the *Conference of the Association for Computational Linguistics (ACL).* 2013.

Comparison of Network Heuristics for Understanding Small Groups in Synchronous Collaborative Learning (L)
Gregory Dyke, Sean Goggins, **Elijah Mayfield**, and Carolyn Penstein Rosé
In the *ACM Conference on Learning Analytics and Knowledge (LAK).* 2013.

LightSIDE: Open Source Machine Learning for Text (B)
Elijah Mayfield and Carolyn Penstein Rosé
In the *Handbook of Automated Essay Evaluation*. 2013.

Linguistic Analysis Methods for Studying Small Groups (B)
Iris Howley, **Elijah Mayfield**, and Carolyn Penstein Rosé
In the *International Handbook of Collaborative Learning*. 2013.

Discovering Habits of Effective Online Support Group Chatrooms (C)
Elijah Mayfield, Miaomiao Wen, Mitch Golant, and Carolyn Penstein Rosé
In the *ACM Conference on Supporting Group Work (Group).* 2012.

Hierarchical Conversation Structure Prediction in Multi-Party Chat (C)
Elijah Mayfield, David Adamson, and Carolyn Penstein Rosé
In the *SIGDIAL Meeting on Discourse and Dialogue*. 2012.

The ACODEA Framework: Developing Segmentation and Classification Schemes for Fully Automatic Analysis of Online Discussions (J)
Jin Mu, Karsten Stegmann, **Elijah Mayfield**, Carolyn Penstein Rosé, and Frank Fischer
In *International Journal of Computer-Supported Collaborative Learning (ijCSCL)*. 2012.

Historical Analysis of Legal Opinions with a Sparse Mixed-Effects Latent Variable Model (C)
William Yang Wang, **Elijah Mayfield**, Suresh Naidu, and Jeremiah Dittmar
In the *Conference of the Association for Computational Linguistics (ACL).* 2012.

Group Composition and Intelligent Dialogue Tutors for Impacting Students' Academic Self-Efficacy (C)
Iris Howley, David Adamson, Gregory Dyke, **Elijah Mayfield**, Jack Beuth, and Carolyn Penstein Rosé
In the *Conference on Intelligent Tutoring Systems (ITS).* 2012.

Oh, Dear Stacy! Social Interaction, Elaboration, and Learning with Teachable Agents (C)

Amy Ogan, Samantha Finkelstein, **Elijah Mayfield**, Claudia D'Adamo, Noboru Matsuda, and Justine Cassell
In the *Conference on Human Factors in Computing Systems (CHI).* 2012.

Computational Representations of Discourse Practices Across Populations in Task-Based Dialogue (C)

Elijah Mayfield, David Adamson, Alexander Rudnicky, and Carolyn Penstein Rosé
In the *International Conference on Intercultural Collaboration (ICIC).* 2012.

Data-Driven Interaction Patterns: Authority and Information Sharing in Dialogue (L)

Elijah Mayfield, Michael Garbus, David Adamson, and Carolyn Penstein Rosé.
In the *AAAI Fall Symposium on Building Representations of Common Ground with Intelligent Agents.* 2011.

Transforming Biology Assessment with Machine Learning: Automated Scoring of Written Evolutionary Explanations (J)

Ross Nehm, Minsu Ha, and **Elijah Mayfield**
In *Journal of Science Education and Technology (JOSTE).* 2011.

Recognizing Authority in Dialogue with an Integer Linear Programming Constrained Model (C)

Elijah Mayfield and Carolyn Penstein Rosé.
In the *Conference of the Association for Computational Linguistics (ACL).* 2011.

Gaining Insights from Sociolinguistic Style Analysis for Redesign of Conversational Agent Based Support for Collaborative Learning (B)

Iris Howley, Rohit Kumar, **Elijah Mayfield**, Gregory Dyke, and Carolyn Penstein Rosé
In *Productive Multivocality in the Analysis of Group Interactions*. In Press.

A Multivocal Process Analysis of Social Positioning in Study Groups (B)

Iris Howley, **Elijah Mayfield**, and Carolyn Penstein Rosé
In *Productive Multivocality in the Analysis of Group Interactions*. In Press.

Missing Something? Authority in Collaborative Learning (C)

Iris Howley, **Elijah Mayfield**, and Carolyn Penstein Rosé
In the *International Conference on Computer-Supported Collaborative Learning (CSCL).* 2011.

ACODEA: A Framework for the Development of Classification Schemes for Automatic Classification of Online Discussions (C)

Jin Mu, Karsten Stegmann, **Elijah Mayfield,** Carolyn Penstein Rosé, and Frank Fischer
In the *International Conference on Computer-Supported Collaborative Learning (CSCL).* 2011.

An Analysis of Perspectives in Interactive Settings (L)
Dong Nguyen, **Elijah Mayfield**, and Carolyn Penstein Rosé
In the *Workshop on Social Media Analysis at Knowledge Discovery and Data Mining (KDD).* 2010.

Using Feature Construction to Avoid Large Feature Spaces
in Text Classification (C)
Elijah Mayfield and Carolyn Penstein Rosé.
In the *Conference on Genetic and Evolutionary Computation (GECCO).* 2010.

Sentiment Classification using Automatically Extracted Subgraph Features (L)
Shilpa Arora, **Elijah Mayfield**, Carolyn Penstein Rosé, and Eric Nyberg
In the *Emotion in Text Workshop at the North American Association for Computational Linguistics (NAACL).* 2010.

An Interactive Tool for Supporting Error Analysis for Text Mining (L)
Elijah Mayfield and Carolyn Penstein Rosé.
In the *Demo Session at the North American Association for Computational Linguistics (NAACL).* 2010.

Sentence Diagram Generation using Dependency Parsing (L)
Elijah Mayfield
In the *Student Research Workshop at the Conference of the Association for Computational Linguistics.* 2009.

Optimizing Java Programs using Generic Types (L)
Elijah Mayfield, John Roth, Daniel Selifonov, Nathan Dahlberg, and Elena Machkasova
In the *Poster Session at the Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA).* 2007.

INVITED TALKS

"Analyzing Authoritative Conversational Language with Machine Learning"
University of Michigan Interactive & Social Computing Seminar, Ann Arbor, MI   4/5/2013
Cornell Information Science Breakfast Seminar Series, Ithaca, NY   3/13/2013

"LightSIDE: Open Source Machine Learning for Text"
University of Pittsburgh Natural Language Processing Group, Pittsburgh, PA   2/22/2013
National Council on Measurement in Education, Vancouver, BC   4/16/2012

SELECTED PRESS

EdSurge. "An 'A' for Clarity."   4/8/2013
Popular Science. "Robo-Grading Programs Judge Student Essays Better Than Humans Do."   8/28/2012
NPR StateImpact. "The Pros and Cons of Using Computers to Teach Students How to Write."   6/8/2012
Science. "Editors' Choice: Automate to Educate."   6/1/2012
e-Literate. "What is Machine Learning Good For?"   5/6/2012
Education Week. "Study Supports Essay-Grading Technology."   4/25/2012
NPR StateImpact. "Computers Can Score Student Essays As Well As Humans, Study Finds."   4/12/2012

ACTIVITIES

Featured Blogger
e-Literate (highly popular educational technology website)   2013-Present

Program Committee
CMU Language Technologies Institute Student Research Seminar   2013

Alumni Mentor
University of Minnesota, Morris Senior Seminar   2011-Present

Teaching Volunteer
Internship Program in Technology-Supported Education, IIIT Hyderabad   2009, 2010
Pittsbugh Science of Learning Center LearnLab Summer School   2010