**Curriculum Vitae: W. Pratt Rogers, Ph.D.**

Assistant Professor, Department of Mining Engineering, University of Utah

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# EDUCATION:

Ph.D. Mining Engineering, University of Arizona, 2015

M.S. Mining Engineering, University of Arizona, 2012

B.S., Mining Engineering, University of Arizona, 2008

# AWARDS / ACHIEVEMENTS:

Faculty Recognition Award, Career and Professional Development Center, University of Utah, 2019

Thomas G. Chapman Fellowship, University of Arizona, 2012

Excellence at Student Interface, Mining and Geological Engineering, U of A, 2012

Outstanding Graduate Student, Mining and Geological Engineering, U of A, Fall 2011

# ACADEMIC EXPERIENCE:

University of Utah, Salt Lake City, Utah

Assistant Professor of Mining Engineering Jan. 2017-present

AdjunctAssistant Professor of Mining Engineering Jan. 2016 - Dec 2016

University of Arizona, Tucson, Arizona

 Teaching and Research Assistant of Mining Engineering

# PROFESSIONAL EXPERIENCE:

SoTech Analytical Services, LLC, Salt Lake City, Utah, President 2016 - Present

Perform mining technology consulting, data warehousing services, develop mining analytics platforms and continuous improvement services.

MISOM Technologies, Tucson, Arizona, VP Product Development 2010-2016

I worked with teams of programmers and mining professionals to develop and deploy data warehouses for mining companies across the US, Canada and Mexico. I provided mining technology and continuous improvement consulting services. I also led to a team of software engineers to develop mining technology systems.

Luminant Mining, Henderson, Texas, Associate Site Engineer, 2008-2010

Short range mine planning team lead Oak Hill Mine & assisted in the development and implementation of companywide planning and performance management operating system

Golder Associates, Tucson, Arizona, AutoCAD Land Desktop Designer, 2006-2008

# RESEARCH GRANTS:

*Current:*

2022 – Utah Governor’s Office of Research Development: EDA Build Back Better Grant - Phase 1 - $28,929: PI

2022 – DOE CORE-CM Investigating critical mineral in the Uinta Basin – Co-PI (my part $43,000)

2022 - Machine learning models that blend subjective and objective data to improve understanding and management of operator fatigue; NIOSH (CDC), $441,000, 2019 – 2022, PI

*Completed:*

2021 - Investigating REE economics in Utah and Colorado Coal Deposits; BLM / Stagg Resource Consultants, $99,981 (invoiced for $32,000), 2021; PI – Partially completed before sponsor ended program

2020 - Ore Stockpile Modeling; Newmont Mining, $50,000, 2020; PI

2019 - Short interval control, analytics and wearable device technology, Peabody Energy, $60,000, 2019, PI

2019 - Initiation of Data and Operational Excellence Lab – Fellowship support for graduate students, $45,000, Newmont, 2017-2019

2019 - Life cycle analysis seed grant & technical support, US-Pakistan Center for Advanced Studies in Water, $25,000, 2019, PI.

2018 - Undergraduate Research: Operations technology and short range mine planning integration**,** Trapper Mine, $25,000, 2018, PI

2018 - Characterization and Effectiveness of Safety and Health Management Systems in the U.S. Mining Industry**,** Alpha Foundation, $500,000 (my part $100,000), 2016-2019, Co-PI, Mike Nelson PI.

# TEACHING:

University of Utah: 2016-Present

HONOR 3700: Automation: F 2019, S 2020

MG EN 5370: Data Management: F 2016, F, 2017, F 2018, F 2019, F 2020, F 2021

MG EN 3010: Intro to Mining: F 2017, F 2018, F 2019, F 2020, F 2021

MG EN 5080: Sustainable Development: S 2019, S 2020, S 2021

MG EN 5350: Mining Health and Safety: S 2016, S 2017, S 2020, S 2021, S2022

MG EN 3015: Field Trips: F 2016, F 2017, F 2019

MG EN 5090: Senior Design: S 2019

MG EN 4990: Mining Seminar: S 2018

University of Arizona: 2010-2012

MNE 407/507 Mining Equipment and Technology. Instructor: Sean Dessureault

MNE 409/509 Mining Operation Management, Instructor: Sean Dessureault

MNE 422/522 Engineering Sustainable Development, Instructor: Sean Dessureault

Short Courses Taught:

* Weeklong course on Block Caving – University of Utah – Fall 2021 (co-taught with Srikant Annavarapu)
* Weeklong course on Mining Analytics – Indian Institute of Technology – August 2018 (IIT paid travel expenses and honorarium)

Teacher Development Courses Taken

* Center for Teaching & Learning Excellence: Managing Cognitive Load, University of Utah – April: 2021
* Center for Teaching & Learning Excellence: Weeklong seminar – Taking your class fully online: University of Utah – 2020
* National Effective Training Institute (NETI) 2019 training seminar: American Society for Engineering Education, Philadelphia, PA.
* Center for Teaching & Learning Excellence – Maximize Media Engagement: Lecture Video and Canvas Engagement: University of Utah – 2018

# GRADUATE STUDENT ADVISOR / CHAIR

1. Elaheh Talebi, Ph.D., (in progress, qualification exam complete) expected graduation in Dec. 2022

Research topic: Developing computational intelligence to model operator fatigue.

1. Ishaan Kapoor, M.S., (in progress) expected graduation December 2022

Research topic: Blockchain and mining traceability

1. Patrick Guild, Ph.D., (in progress, topic identified, committee being formed) expected graduation in May 2023

Research topic: Distributed leadership models in the era of IOT and analytics

1. Shantae Lee, M.S., Defends in July 2022

Research topic: Assessing perception of operator fatigue

1. Aaron Young, Ph.D., successfully defended May 2022 graduates August 2022

Research topic: digital transformation and stockpile modeling

1. Joao Marque, M.S., Graduated in August 2021

Research topic: IOT and operator fatigue

1. James Newman, Ph.D., Graduated in Spring 2021

Research topic: Socio-technical systems modeling

1. Hiago Amador, M.S., Graduated in May 2020

Research topic: short interval control modeling

# GRADUATE STUDENT COMMITTEE MEMBER:

1. Arce, Samuel; PhD Chemical Engineering, BYU, in progress
2. Oduro, Lewis: M.S. Mining Engineering, in progress
3. Amoakoh, Daniel; PhD Mining Engineering, in progress
4. Sarantsatsral, Narmandakh, PhD Mining Engineering, in progress
5. Weyher, Robert, PhD Mining Engineering, in progress
6. Moyes, Alexander, PhD Mining Engineering, completed 2022
7. Bilguunkhavar Erdenekhuyag (Bonnie), M.S. Mining Engineering completed Summer 2021
8. Ashley Hodgson, M.S. Mining Engineering, completed in 2018

# PROFESSIONAL SERVICE AND LEADERSHIP

* Minerals: Editor for special issues on Computational Intelligence, 2021
* Mining, Metallurgy & Exploration Journal Editorial Board: Associate Editor 2018 – present
* Mining, Metallurgy & Exploration Journal Editorial Board: Editor for Special Issue on Mine Safety and Health 2020
* SME Safety and Health Division 2020-2021: Past-Chair
* SME Safety and Health Division 2019-2020: Chair
* SME Safety and Health Division 2018-2019: Chair elect
* SME Safety and Health Division 2017-2018: Programming Chair
* SME Safety and Health Division 2016-2017: Secretary
* Utah Labor Commission: Mine Safety Technical Advisory Council – Voting Member 2016-present
* Arizona SME 2015, Session Chair: Blasting session

# UNIVERSITY, COLLEGE, AND DEPARTMENT SERVICE

* College of Mines and Earth Science: Committee for advancement of inclusivity and diversity (CAID), 2021-Present
* Utah STEM Ecosystem, Salt Lake School District, 2020 - Present
	+ Participated in the grant development and education council member of the STEM ecosystem. Developed interactive mining technology and automation activities for education and outreach.
* Department of Mining Engineering: Northwest Middle School STEAM Day June 1, 2022
	+ Presented to multiple classes on mining engineering and technology
* Department of Mining Engineering: Emery High School recruiting May 2022
	+ Presented to multiple classes on mining engineering and the department
* College of Mines and Earth Science: Discover Engineering Spring / 2022
	+ Presented at multiple high schools for an information session on mining engineering
* College of Mines and Earth Science: Engineering Day presentations 11/13/2021
	+ Presented to over 45 high schoolers on modern mining and automation
* Mining Department: STEM fair @ Salt Lake Community College: 10/2021
	+ Set up and attended booth at Salt Lake Community College transfer day
* College of Mines and Earth Science: Engineering Day presentations 11/22/2020
	+ Presented to over 45 high schoolers on modern mining and automation
* College of Mines and Earth Science: IT Resources Committee 2017-Present
* Utah Mining Robotic Club Student Organization – Club Advisor – 2018 - Present
* Indian Institute of Technology campus tour and collaboration – August 2018
* University of Utah Parking System and Public Transportation Advisory Committee 2017 – 2020
* Arranged field trip for 10 students to ASI Robotics – 4 / 2018
* College of Mines and Earth Science: Engineering Day 11/2017
* College of Mines and Earth Science: Outreach Jordan Hill Elementary 10/2017
* Invited to speak at NIOSH Spokane office 2/2/2017
* Arranged field trip to Cripple Creek & Victor mine for undergraduate students 2/23/2017
* Invited to Ciner Green River operation to present on process control optimization 12/2016
* Invited to Dyno-Nobel Think tank on future of mining 11/2016
* Invited to Barrick’s Cortez mine for technology strategy development 11/2016
* College of Mines and Earth Science: Computer Resources Committee
* College of Mines and Earth Science: Science / Engineering Day Planning Committee
	+ Participated in engineering day Nov 2016 with Immersive Technologies
* Visit to Pontifical Catholic University of Peru for coordination of exchange program with the University of Utah, April 26, 2016

# BOOKS

1. Ganguli, R., Rogers, W.P., & Dessureault S., eds. 2022 *Advances in Computational Intelligence Applications in the Mining Industry: Reprint of Special Issue.* Switzerland <https://doi.org/10.3390/books978-3-0365-3158-8>

# PUBLICATIONS – (Peer-Reviewed Journals)

1. **Rogers, W.P**., Marques, J., Talebi, E., Drews, F.A. IOT enabled wearable fatigue tracking system for mine operators. Minerals. 12 (2), 2023
2. Talebi, E.; **Rogers, W.P.;** Drews, F.A. Environmental and work factors that drive fatigue of individual haul truck drivers. Mining. 2(3), 542-565, 2022, <https://doi.org/10.3390/mining2030029> - Graduate student
3. Ishaan, I., **Rogers, W.P.,** &M. Mustafa Kahraman. The problem of conflict minerals: A review of current approaches and a web 3.0 inspired road ahead. Resources Policy. V 79, 2022 <https://doi.org/10.1016/j.resourpol.2022.103064> – Graduate Student
4. Young, A.; **Rogers, W.P.** A High-Fidelity Modelling Method for Mine Haul Truck Dumping Process. Mining 2022, 2, 86-102. <https://doi.org/10.3390/mining2010006> - Graduate student
5. Talebi, E.; **Rogers, W.P**.; Morgan, T.; Drews, F.A. Modeling Mine Workforce Fatigue: Finding Leading Indicators of Fatigue in Operational Data Sets. Minerals 2021, 11, 621. <https://doi.org/10.3390/min11060621> - Graduate student
6. Young, A.; **Rogers, W.P.** Modelling Large Heaped Fill Stockpiles Using FMS Data. Minerals 2021, 11, 636. <https://doi.org/10.3390/min11060636> - Graduate student
7. **Rogers, W.P**., Lutz, E.A. Preface to the MME Special Issue on Miner Health and Safety Part I. *Mining, Metallurgy & Exploration* **37,**1797 (2020). <https://doi.org/10.1007/s42461-020-00348-w>
8. Drews, F.A., **Rogers, W.P.**, Talebi, E. *et al.* The Experience and Management of Fatigue: A Study of Mine Haulage Operators. *Mining, Metallurgy & Exploration* **37,**1837–1846 (2020). <https://doi.org/10.1007/s42461-020-00259-w>
9. Kahraman, M. M., **Rogers, W.P.**, & Dessureault, S., (2020). Bottleneck Identification and Ranking Model for Mine Operations, Journal of Production Research, <https://doi.org/10.1080/09537287.2019.1701231>
10. Machalek, D., Blackburn, L., Young, A., **Rogers, W.P.**, & Powell, K., A Novel Predictive Automation Methodology for Mine De-Watering and Intermediate Product Transportation Interacting with the Smart Grid, Minerals Engineering, 145 (2020) - Graduate Student / Mentee
11. **Rogers, W.P.,** Kahraman, M.M., Drews, F.A. et al., Automation in the Mining Industry: Review of Technology, Systems, Human Factors and Political Risk, Mining, Metallurgy & Exploration (2019) 36: 607. <https://doi.org/10.1007/s42461-019-0094-2>
12. Young, A., **Rogers, W.P.**, The State of Mining’s Digital Transformation, Mining Metallurgy and Exploration (2019) 36:683. DOI: <https://doi.org/10.1007/s42461-019-00103-w> – Graduate Student
13. Blackburn, L., Young A., **Rogers, P.**, Henderson, J., Powell, K., (2018). Dynamic Optimization of a District Energy System with Storage Using a Novel Mixed-Integer Quadratic Programming Algorithm. Optimization and Engineering. <https://doi.org/10.1007/s11081-018-09419-w> - Graduate Student Mentee
14. **Rogers, W.P.**, Kahraman, M. M., & Dessureault, S., (2018). Formal Assessment and Measurement of Data Utilization and Value for Mines. Mining, Metallurgy, and Exploration. DOI: <https://doi.org/10.1007/s42461-018-0044-4>
15. **Rogers, W.P.**, Kahraman, M. M., & Dessureault, S., (2017). Exploring the value of using data: a case study of continuous improvement through data warehousing. International Journal of Mining, Reclamation, and Environment. DOI: <https://doi.org/10.1080/17480930.2017.1405473>
16. **Rogers, W. P.**, Nelson, M. G., Richins, A., & Hodgson, A. (2017). Data Management Best Practices of Complex Socio-technical Systems: A Review of US Mining Safety and Health Management. *Geo-Resources Environment and Engineering (GREE)*, *2*, 83-88. DOI: <http://dx.doi.org/10.15273/gree.2017.02.016>

# PUBLICATIONS – (Peer-Reviewed Conference Proceedings)

1. Young, Aaron; Oliveira, Hiago Antunes Amador de; **Rogers, William Pratt**. BREAKING THE BARRIER: CONSIDERING HOW IOT CAN HELP BRAZILIAN TAILINGS DAMS, p. 385-390. In: 20° Simpósio de Mineração, São Paulo, 2019. ISSN: 2594-357X, DOI 10.5151/2594-357X-33795 – Graduate Student
2. Oliveira, Hiago Antunes Amador de; Young, Aaron Samuel; **Rogers, William Pratt**. DATA DRIVEN LEAN MINING USING SHORT INTERVAL CONTROL**,** p. 227-237. In: *20° Simpósio de Mineração*, São Paulo, 2019. ISSN: 2594-357X, DOI 10.5151/2594-357X-33628 – Graduate student
3. Dessureault, S., & **Rogers, W. P.** (2015). Calculating correlation of the impact of social media interactions on the social risk for mineral development. In *Application of Computers and Operations Research in the Mineral Industry - Proceedings of the 37th International Symposium, APCOM 2015*(pp. 668-674). Society for Mining, Metallurgy and Exploration (SME)
4. **Rogers, W.P.**, and Dessureault, S., 2011. Sustainable development strategies modelled through a stakeholder intelligence suite: case study of the American coal industry. *Proceedings of the First Seminar on Social Responsibility in Mining*—*SRMining*, Santiago Chile, October 19-21. Gecamin: Santiago (Proceedings available on CD)
5. **Rogers, W.P.**, 2011. Strategies of American coal companies in promoting the continued use of coal, *Proceedings of the Fifth International Conference on Sustainable Development in the Minerals Industry—Aachen International Mining Symposium*, Aachen, Germany, June 14-17. RWTH: Aachen (Proceedings available on CD)

# TECHNICAL PAPERS

1. Dessureault, S., and **Rogers W.P**., 2011 “Los Stakeholders: El lado mas sensible del la industria minera (parte 1). *Tecnologia Minera*, Sept-Oct 2011, Ano 5, Numero 26, pp. 94-97
2. Dessureault, S., and **Rogers W.P.**, 2011 “Los Stakeholders: El lado mas sensible del la industria minera (parte 2). *Tecnologia Minera*, Nov-Dec 2011, Ano 5, Numero 27

# INVITED CONFERENCE PRESENTATIONS

1. **Rogers, W.P**., 2021. The Experience and Management of Fatigue: A Study of Mine Haulage Operators, Penn-Anthracite SME Krumb Lecture, PA (Virtual Lecture), July 21,
2. Powell, K., **Rogers, W.P.**, 2019. T Forecasting and Dynamic Real-Time Optimization of a Campus District Energy System using PI, PI World Annual Conference, San Francisco, CA April
3. **Rogers, W.P.**, 2018. The Nexus of Supervised Learning and Analytics: Speeding Up Informed Critical Decisions, AEMA Annual Conference, Spokane, WA, December
4. **Rogers, W.P.**, 2018. Overview of Data Analytics in the Mining Industry, NIOSH Mine Safety and Health Research Advisory Committee Annual Meeting, Denver, CO, September
5. **Rogers, W.P.**, 2018 Data Management Best Practices of Complex Socio-technical Systems: A Review of U.S. Mining Safety and Health Management, Mining Engineering Association of India – Kolkata Chapter, Kolkata, India, August
6. **Rogers, W.P.**, 2018. Keynote address for Academic Session, OSIsoft PI World Conference, San Laredo, CA, March
7. **Rogers, W.P.**, 2017. Applied Data Science, Big Data and The PI System, OSIsoft Regional Conference, San Francisco, CA, March 19th
8. **Rogers, W.P.**, 2016. Applied Data Science, Big Data and The PI System, OSIsoft Regional Conference, Salt Lake City, UT, October 5th
9. **Rogers, W.P.**, 2016. Developing strategies to improve integrated data used at mining companies in Occupational Health and Safety, XX International Mining Safety Seminar, Lima, Perú, April 27-29

# CONFERENCE PRESENTATIONS

1. Kapor, I., and **Rogers, W.P.** 2022. Blockchain and Mineral Traceability, SME Annual Meeting, Salt Lake City, Utah, Feb 29.
2. Lee, S., and **Rogers, W.P.** 2022. Exploring Fatigue Management of Haul Truck Drivers Through a Socio-Technical Perspective, SME Annual Meeting, Salt Lake City, Utah, Feb 29.
3. Talebi, E., and **Rogers, W.P.** 2022. Exploring environmental and work factors that drive fatigue of individual haul truck drivers, SME Annual Meeting, Salt Lake City, Utah, Feb 29.
4. Marques, J., and **Rogers, W.P.** 2021. Wearables: a tool for investigating fatigue in the mining workforce, Presented at Virtual SME Annual Meeting, Mar 1-5
5. Talebi, E., and **Rogers, W.P.,** 2021. Using a Machine Learning Model to Find Leading Indicators of Fatigue of Haul Truck Drivers, presented at SME Annual Meeting, Mar 1-5
6. Young, A., and **Rogers, W.P.,** 2021.Modeling ore stockpiles, presented at SME Annual Meeting, Mar 1-5
7. Amador, H., and **Rogers, W.P.,** 2020. Development of a Short Interval Control System for Reduction of Operational Variance through Workforce Engagement, Presented at SME Annual Meeting, Phoenix AZ, Feb
8. Young, A., and **Rogers, W.P.,** 2020. Digital transformation in mining, Presented at SME Annual Meeting, Phoenix AZ, Feb
9. **Rogers, W.P.,** 2019 The Nexus of Supervised Learning and Analytics: Speeding Up Informed Critical Decisions, SME Annual Meeting, Denver Colorado, Feb 2019
10. **Rogers, W.P**., 2018 Health and safety risk modeling through operational data sets; machine learning and a new approach to safety and health management, CIM Annual Meeting, Vancouver, Canada, BC,
11. **Rogers, W.P.**, 2017 Data Management Practices in an Era of Complex Sociotechnical Systems, SME Annual Meeting, Denver, CO, February 19-22
12. **Rogers, W.P.**, 2016. A Mobile App for Every Employee: A New Paradigm in Production Management, SME Annual Meeting, Phoenix, AZ, February 21-24
13. **Rogers, W.P.**, 2016. The Data Value Index (DVI): A Systematic Means of Quantifying the Current and Potential Value of Data, SME Annual Meeting, Phoenix, AZ, February 21-2 4
14. **Rogers, W.P.**, 2015. Big data and the economics of permitting a new mine, SME Annual Meeting, Denver, CO, February 15-18
15. **Rogers, W.P.**, 2015. Modern mine management, data analytics, and tablets, SME Annual Meeting, Denver, CO, February 15-18
16. **Rogers, W.P.**, 2014. Quantitative Justification model for investments in data-driven systems in the mining industry, SME Annual Meeting, Salt Lake City, UT, February 23-26
17. **Rogers, W.P.**, 2012. Sustainable development and collaboration organizations for the mining industry: the institution of a NGO, SME Annual Meeting, Seattle, WA, February 19−22rd