

## Dr. Amin Mousavi

Assistant Professor at Faculty of Engineering, Tarbiat Modares University, Iran

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### **Assistant Professor in Mine Planning and Optimization**

As an expert of mine planning and optimization, I have several years of research and professional experience in planning and scheduling of mining projects. My work mostly covers those industry-scale problems which are intractable for commercial software and required in-house solutions.

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### **Skills Summary**

- Qualifications in Mining Engineering and Operations Research with the strong knowledge of Statistics and Computer Sciences;
- Strong understanding of mining engineering principals including open pit design, underground mining methods, drilling, blasting and haulage;
- Demonstrated experience in strategic, tactical and operational mine planning and optimisation with a broad knowledge of mining engineering environment;
- Strong knowledge of mine design and planning software such as Datamine, NPV Scheduler, Gemcom Whittle, and sounds knowledge of other commercial packages including Surpac and Runge XPAC;
- Demonstrated experience in operations research techniques including linear and integer programming, network flow optimisation, supply chain management, production planning and inventory theory;
- Demonstrated skills in developing solution algorithms including heuristics, metaheuristics, and hybrid heuristic algorithms;
- Strong knowledge of Statistics including exploratory data analysis, descriptive statistics, data fusion, multi-variable regression, and Geo-Statistics;
- Advanced programming skills in MATLAB, Python, ILOG CPLEX, FICO XPRESS;
- Excellent verbal and written communication skills;

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### **Education**

**2012-2015** PhD, Operations Research, Queensland University of Technology, Australia

Thesis Title: [Optimisation of Open Pit Mine Block Sequencing](#)

Supervisor: Professor Erhan Kozan

Keywords: *Optimisation, Mixed Integer Programming, CPLEX, Hybrid Heuristic, Local Search Heuristic, Simulated Annealing, Tabu Search*

**2007- 2010** Master of Science, Feasibility Studies, Tarbiat Modares University, Iran

**2003-2007** Bachelor of Science, Mining Engineering, Isfahan University of Technology, Iran

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## Employment History

**Jan 2017- current**

**Assistant Professor**

Tarbiat Modares University/Iran

- Modelling and solving industrial-scale optimisation problems in industrial projects
- Lecturing postgraduate courses
- Supervising postgraduate students

*Key research Projects:*

- Mine planning and optimisation
- Waste dumping optimisation
- Truck dispatching optimisation
- Geo-metallurgy modelling of production benches

**June 2018- Sep 2018**

**Visiting Research Scientist**

CSIRO/Australia

- Research on underground mining optimisation

*Key research Projects:*

- In Place Mining

**Aug 2015-Dec 2015**

**Research Assistant**

Queensland University of Technology, Australia

- *Developing a new methodology to dynamically schedule shovels*
- *Applying the developed approach on a real case study*

*Key research Projects:*

- Machine Scheduling optimisation with sequence dependent set-up time

**Oct 2010 – May 2012 (Contract)**

**Decision Support Analyst**

Pars Gostareyeh Mahde Khalij Fars Company, Iran

**Sep 2007 – Oct 2010 (Part-time)**

**Mining Engineer**

Zamin Pajouhan Ofogh Company, Iran

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## Taught courses

Master of Mining Engineering:

- Optimisation Algorithms
- Advanced Statistics and Engineering Probability
- Ore Reserve Evaluation and Geo-Statistics
- Mine Reclamation

PhD in Mining Engineering:

- Mine Planning
- Optimisation Techniques for Surface Mining

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## Computer and Programming Skills

- Computer Programming (Advanced MATLAB skill, Python )
- Optimisation (ILOG CPLEX, FICO XPress)
- Mine Design and Planning (Datamine Studio, NPV Scheduler, Datamine OP)

- Project Management (Ms Project)
- Geo-statistics (WinGslib, SGEMS)
- Data Analytics Packages (SPSS, SQL, Tableau, IBM Watson and MINITAB)
- Feasibility Study (Comfar)
- Office (Word, Excel, PowerPoint, Visio)

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### Awards and Funds

- QUT 2015 Outstanding Doctoral Thesis Award/ Executive Dean's Commendation Award
- QUT Write up Scholarship 2015.
- QUT HDR Scholarship, 2012.
- CRC ORE Research Scholarship, 2012.
- Ranked 1<sup>st</sup> amongst seven mining engineering students at the MS.c Program, 2009.

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### Selected Publications

- **Mousavi, A.**, Sellers, E (2019). "*Optimisation of production planning for an innovative hybrid underground mining method*". Resources Policy, [doi.org/10.1016/j.resourpol.2019.03.002](https://doi.org/10.1016/j.resourpol.2019.03.002).
- **Mousavi, A.**, Sayadi, A.R., & Fathianpour, N (2016). "*A Comparative Study of Kriging and Simulation-Based Methods in Classifying Ore and Waste Blocks*". Arabian Journal of Geosciences, [DOI: 10.1007/s12517-016-2728-8](https://doi.org/10.1007/s12517-016-2728-8).
- **Mousavi, A.**, Kozan, E., & Liu, S. Q (2016). "*Comparative Analysis of Three Metaheuristics for Open Pit Block Sequencing*". Journal of Heuristics, [DOI 10.1007/s10732-016-9311-z](https://doi.org/10.1007/s10732-016-9311-z).
- **Mousavi, A.**, Kozan, E., & Liu, S. Q (2016). "*Open Pit Block Sequencing Optimization: A Mathematical Model and Solution Technique*", Engineering Optimization, <http://dx.doi.org/10.1080/0305215X.2016.1142080>.
- **Mousavi, A.**, Kozan, E., & Liu, S. Q. (2014). "*An Integrated Approach to Optimise Open-Pit Mine Block Sequencing*". In Industrial Engineering Non-Traditional Applications in International Settings, edited by Bopaya Bidanda, Ihsan Sabuncuoglu and Bahar Y. Kara, 83-98. CRC Press.
- Sayadi, A. R., Fathianpour, N., & **Mousavi, A.** (2011). "*Open pit optimization in 3D using a new artificial neural network*". Archive of Mining science journal, Vol. 56, No 3, p. 389-403.