

Amirreza Ghasemi

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Summary

Experienced Machine Learning Engineer with a proven track record in developing computer vision and natural language processing (NLP) models. Possesses advanced proficiency in TensorFlow and has earned professional certificates in the platform. An AWS Certified Machine Learning – Specialty professional with a deep understanding of cloud computing and its implementation in machine learning. A strong problem solver with excellent analytical and communication skills. Proven ability to deliver high-quality work in a fast-paced environment. Enthusiastic about embracing new challenges and striving to create a positive impact on people's lives.

Skills

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| Computer Skills | <ul style="list-style-type: none">• Fundamental Programming Languages: Python, C++, MATLAB, SQL, C, FORTRAN, CUDA• Web Development: HTML, CSS, JavaScript, Node.js, Next.js, Flask, Django• Mobile App Development: Swift, React Native• Other: TensorFlow, PyTorch, Keras, Scikit-Learn, Amazon Web Service, Google Cloud, Docker, Kubernetes |
| Technical Skills | <ul style="list-style-type: none">• Advanced proficiency in TensorFlow and experience developing computer vision and natural language processing (NLP) models.• AWS Certified Machine Learning - Specialty, DevOps, and Solutions Architect, with a deep understanding of cloud computing and its implementation in machine learning applications.• Proficient in writing Backend and Frontend code using languages such as Python, JavaScript, and HTML/CSS.• Experienced in statistical modeling, scientific computing, numerical simulation of fluid flow, high performance computing (HPC), computational fluid dynamics, discrete element method, and signal processing. |

Certificates

2023	TensorFlow Developer Certificate	Google
2023	AWS Certified Machine Learning - Specialty	Amazon
2023	AWS Certified DevOps Engineer - Associate	Amazon
2023	Meta Back-End Developer	Coursera
2023	Meta Front-End Developer	Coursera
2023	Reinforcement Learning Specialization	Coursera
2023	Recommender Systems Specialization	Coursera
2023	Visual Perception for Self-Driving Cars	Coursera
2023	Computational Neuroscience	Coursera
2023	Software Architecture & Technology of Large-Scale Systems	Udemy
2022	Practical Data Science on the AWS Cloud Specialization	DeepLearning.AI
2022	Deep Learning Specialization	DeepLearning.AI
2020	AWS Certified Solutions Architect - Associate	Amazon
2020	AWS Certified Cloud Practitioner (CLF)	Amazon
2020	IBM AI Engineering	coursera
2020	IBM Data Science	coursera

Professional Experience

sovaSage Inc.	Remote
Machine Learning Engineer	Jan 2021 - Present
<ul style="list-style-type: none">• Developed computer vision models for detecting human faces, identifying facial features and custom keypoints, and estimating pose using Convolutional Neural Network (CNN) and Transformers.• Automated the end-to-end process of building, training, and deploying the computer vision models on AWS Sagemaker, improving model efficiency and performance.• Successfully built, trained and deployed Natural Language Processing (NLP) models for a chatbot system by fine-tuning Large Language Models (LLMs), resulting in improved accuracy and efficiency of the chatbot system.• Developed application backend code, integrating machine learning models into the application and ensuring scalability and performance.• Developed and implemented a comprehensive suite of unit tests for the application backend code, resulting in significant improvements in code quality and ensuring the ongoing functionality of the application.• Played a pivotal role in the growth and success of the company by providing expert guidance and executing cutting-edge machine learning strategies that enabled the company to transition from the early-stage to venture-funded stage.	

Saint Anthony Falls Laboratory

Minneapolis

Postdoctoral Associate

June 2020 - Jan 2021

- Designed and conducted experimental research to develop a tailings management technology for oil companies in Canada, optimizing its performance while adhering to industry standards and regulations.

Saint Anthony Falls Laboratory

Minneapolis

Research Assistant

September 2016 - May 2020

- Improved the current understanding of fluid-particle interactions in rivers through the development of a probabilistic framework. Adopted and improved an existing FORTRAN code to simulate multi-phase flows with high-performance computing algorithms.
- Developed a digital image processing algorithm using Hough Transform in MATLAB to detect and track the motion of particles.
- Improved image quality for particle tracking purposes by applying a low-pass and high-pass filters in MATLAB and Python to better distinguish particles from background.

University of Minnesota

Minneapolis

Teaching Assistant

September 2016 - May 2020

- Taught +150 students in 5 sections of fluid mechanics laboratory.
- Trained 2 graduate students as the potential future teaching assistants.

University of Minnesota

Minneapolis

Business Consultant Intern

June 2018 - August 2018

- Advised a health insurance company about entering the "end of life care" market by performing market and clinical research.

University of Minnesota

Minneapolis

Business Consultant Intern

September 2017 - December 2017

- Advised one of the top 3 single-family home property management companies in the U.S. about the main reasons for their client churn.

University of Kentucky

Lexington

Research and Teaching Assistant

September 2014 - June 2016

- Performed experimental studies to characterize turbulent flows in rivers that are responsible for sediment transports.
- Improved signal quality by performing proper orthogonal decomposition (POD) to remove noises at high frequencies.

Education

University of Minnesota

Minneapolis

PhD in Civil Engineering (GPA: 4.0)

September 2016 - May 2020

- A Study of Particle Entrainment in Two Common Particle-Fluid Flows in Nature: Bedload Transport in Rivers and Debris Flows in Upland Regions.

University of Kentucky

Lexington

M.Sc in Civil Engineering (GPA: 3.88)

September 2014 - June 2016

- Study of Macroturbulence and bursting via the -1 spectral power law region of turbulent open channel flows over gravel beds.

Sharif University of Technology

Tehran

B.Sc in Civil Engineering (GPA: 3.26)

September 2010 - June 2014

Honors and Awards

2020	Alvin G. Anderson award , given each year to one student with outstanding records pursuing water resources at the University of Minnesota.	University of Minnesota
2019	Abbas Ali and Mrs. Rowshan K. Daneshy fellowship , given to top Iranian students in science and engineering fields at the University of Minnesota.	University of Minnesota
2018	Travel Grant , awarded by the Civil Engineering department to attend American Geophysical Union conference.	University of Minnesota
2017	Travel Grant , awarded by the Civil Engineering department to attend American Geophysical Union conference.	University of Minnesota
2010	Ranked top 0.05% (122 out of ~ 460,000) , Public Universities Entrance Exam	Iran
2009	Semi finalist , Physics Olympiad	Iran
2009	Finalist , Laboratory competition	Mashhad, Iran

Selected Publications

- **Ghasemi, A.**, & Fox, J. F. (2023). Experimental Investigation of Turbulence Spectra for Flow over Gravel Beds: Spectral Scaling and Macroturbulence Streampower. *Journal of Hydraulic Engineering*, 149(1). (Editor's Choice Selection)
- Hill, K., **Ghasemi, A.**, Borhani, S., Viparelli, E. (2022). Computational Simulations of Bed Surface Variability and Particle Entrainment in a Gravelbed River. *Authorea Preprints*.
- Hill, K., **Ghasemi, A.** (2021, December). Particle size vs. fluid fluctuations: particle-scale controls of vertical diffusion in bed-load transport systems. In *AGU Fall Meeting Abstracts*.
- **Ghasemi, A.** (2020). A Study of Particle Entrainment in Two Common Particle-Fluid Flows in Nature: Bedload Transport in Rivers and Debris Flows in Upland Regions (Doctoral dissertation, University of Minnesota).
- **Ghasemi, A.**, Hill, K. M. (2019, December). Particle-scale Discrete Element Method (DEM) Study of the Role of Turbulence Fluctuations on the Transport of Particles in Bedload Transport. In *AGU Fall Meeting Abstracts*.
- **Ghasemi, A.**, Fox, J., Husic, A. (2019). Predicting macroturbulence energy and timescales for flow over a gravel bed: Experimental results and scaling laws. *Geomorphology*, 332, 122-137.
- **Ghasemi, A.**, Kaitna, R., Fritton, P., Blankenship, B.T., Feng, Q., Densmore, A., DeHaas, T., & Hill, K.M. (2019). Erosion by Experimental Debris Flows: Particle Size Effects. *Debris-Flow Hazard Mitigation Conference*, Golden, CO.
- **Ghasemi, A.**, Hill, K. M. (2018, December). Statistical Analysis of Bed Surface Variability, Particle Entrainment, and Transport of Particles among Narrow and Bimodal Grain Size Distributions. In *AGU Fall Meeting Abstracts*
- Hill, K. M., **Ghasemi, A.**, Fritton, P., Man, T., Stone, A., Mullenbach, J. (2018, December). Investigations of Changing Grain-Grain Interactions in Experimental Debris Flows to their Larger Scale Flow and Erosion Dynamics. In *AGU Fall Meeting Abstracts*
- Hill, K., **Ghasemi, A.**, Borhani, S., Viparelli, E. (2018, April). Use of discrete element modeling for a physics-based link between bed surface variability and particle entrainment statistics. In *EGU General Assembly Conference Abstracts*
- Borhani, S., **Ghasemi, A.**, Hill, K. M., Viparelli, E. (2017, December). Statistically Based Morphodynamic Modeling of Tracer Slowdown. In *AGU Fall Meeting Abstracts*
- **Ghasemi, A.**, Borhani, S., Viparelli, E., Hill, K. M. (2017, December). Discrete Element Method Modeling of Bedload Transport: Towards a physics-based link between bed surface variability and particle entrainment statistics. In *AGU Fall Meeting Abstracts*
- Hill, K. M., Mullenbach, J., **Ghasemi, A.**, Feng, Q., Fritton, P. (2017, December). Particle-Scale Studies of the Influence of the Properties of the Matrix of a Debris Flow on its Erosional Behavior. In *AGU Fall Meeting Abstracts*
- Ghasemi, A., Nikbakhti, R., **Ghasemi, A.**, Hedayati, F., Malvandi, A. (2017). Parallelized numerical modeling of the interaction of a solid object with immiscible incompressible two-phase fluid flow. *Engineering Computations*
- Malvandi, A., Ghasemi, A., Nikbakhti, R., **Ghasemi, A.**, Hedayati, F. (2016). Modeling and parallel computation of the non-linear interaction of rigid bodies with incompressible multi-phase flow. *Computers Mathematics with Applications*
- **Ghasemi, A.** (2016). Study of macroturbulence and bursting via the -1 spectral power law region of turbulent open channel flows over gravel beds.