Darijani Ali

Aachen, Germany

+4917642743283 | ali.darijani.me@gmail.com | adarijani.github.io | github.com/adarijani | linkedin.com/in/ali-darijani-675b52241/

"Simplicity is deceptively complicated:-)"

Personal Profile

Half mathematician, half computer scientist who has the mathematical knowledge to understand the underlying work of an existing software tool and the programming skill to bend it to his will. And that is pretty much it.

Education

RWTH Aachen University *Aachen, Germany*

MSc

- Simulation Sciences

Sharif University of Technology *Tehran, Iran*

BSc

- Mechanical Engineering

Work Experience

Tara School *Bam, Iran*

Founder/CEO and Science/Tech Specialist

- Modern English Teaching Design
- Implicit Teaching of Challenging Concepts
- Teaching Math, Physics, CS through Modern Critical Thinking Games(Tower of Hanoi, Jenga, ...)
- **Technical Skills:** Math, Computer Science, ESL Methods
- **Soft Skills:** googling, speed reading, teamwork, time management, Communication, presentation skills.

Asiakadeh Ecotourism Resort *Bam, Iran*

Founder/CEO and Tech Specialist

- Exposition of The Business Through Modern Marketing
- **Technical Skills:** Linux, Zsh, SSH, Web Programming, LaTeX
- **Soft Skills:** googling, speed reading, teamwork, time management, Communication, presentation skills.

RWTH Aachen University(AICES - Aachen Institute for Advanced Study in Computational Engineering Science) *Aachen, Germany*

Research Assistant

- Learning Stochastic Differential Equations and in Turn Probability Theory
- Programming High-Performance Code in C/C++
- **Technical Skills:** Linux, Zsh, SSH, C, C++, LaTeX
- **Soft Skills:** googling, speed reading, teamwork, time management, Communication, presentation skills.

RWTH Aachen University(AICES - Aachen Institute for Advanced Study in Computational Engineering Science) *Aachen, Germany*

Research Assistant

- Learning Continuum Mechanics and Tensor Calculus
- Programming Toy Probelms for Demonstration Purposes
- Technical Editing of a PhD dissertation
- **Technical Skills:** Linux, Zsh, SSH, C, C++, LaTeX
- **Soft Skills:** googling, speed reading, teamwork, time management, Communication, presentation skills.

RWTH Aachen University(Digital Additive Production (DAP)) *Aachen, Germany*

Research Assistant

- Symbolic Computation
- Graph Based Visualization
- Computer Graphics
- Computational Geometry
- **Technical Skills:** Linux, Zsh, SSH, Python, Graphviz, C++, OpenGL, LaTeX
- **Soft Skills:** googling, speed reading, teamwork, time management, Communication, presentation skills.

Skills

Operating Systems	UNIX, Linux, POSIX, macOS, Darwin, Arch Linux
Computing Clusters	Secure Shell(SSH), X Window System, Public-key cryptography, Slurm Workload Manager, Module System
Compiled Languages	C, C++
Scripting Languages	Bash, Zsh, *sh, Python
Build Systems	GNU Make, CMake
Versioning Systems/Platforms	Git, GitHub, GitLab
Markup Languages	HTML, XML, Markdown, Pandoc, YAML, AsciiDoc
Typesetting Languages	TeX, LaTeX, troff, groff
Text Processing Languages	sed, awk
Static Site Generators	Jekyll
Numerical Libraries	NumPy, Pandas, SciPy, LAPACK, Eigen
Machine/Deep Learning Frameworls	scikit-learn, TensorFlow
Visualization Libraries/Packages	Matplotlib, Gnuplot, OpenGL, Graphviz
Math	Extended Knowledge in Deterministic and Stochastic Math
Soft Skills	google-fu, subliminal pattern recognition, speed reading, time management

Languages

English TOEFL 107, GRE General 321, Multiple RWTH Language Center Certificates, and ...

Achievements

Full Scholarship, Ontario Tech University Admission Process *Canada*

University Projects

Introduction to High-Performance Computing *Aachen, Germany*

RWTH Aachen University

- Project 1: RWTH Cluster Environment
- Project 2: Processor and Memory
- Project 3: Memory Access, Performance Analysis and Code Balance
- Project 4: Parallel Computers and Networks
- Project 5: OpenMP
- Project 6: MPI
- Project 7: GPU
- **CS Skills:** Linux, Zsh, rsync, SSH, GNU Make, SLURM, Gnuplot
- **Math Skills:** Dense Linear Algebra, Sparse Linear Algebra
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Data Analysis and Visualization *Aachen, Germany*

RWTH Aachen University

- Scientific Visualization
- Data Analysis
- **CS Skills:** Linux, Zsh, rsync, SSH, GNU Make, SLURM, Gnuplot
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Statistical Physics and Molecular Dynamics *Aachen, Germany*

RWTH Aachen University

- step 1: RWTH Cluster Environment
- step 2: Introduction to GROMACS and VMD
- step 3: Time Integration Algorithms With GROMACS
- **CS Skills:** Linux, Zsh, rsync, SSH, GNU Make, SLURM, Gnuplot
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Applied Quantum Mechanics

Aachen, Germany

RWTH Aachen University

- Particle in a Box Using Python
- Time-dependent Schrödinger Equation for a Particle in a Box Using Python
- Piece-Wise Constant Potentials for a Particle Using Python
- Linear Potentials for a Particle Using Python
- Harmonic Oscillator Using Python
- Spherical Harmonics Using Python
- Hydorgen Atom Using Python
- Perturbation Theory Using Python
- Time-Dependent Perturbation Theory Using Python
- **CS Skills:** Linux, Zsh, rsync, SSH, GNU Make, SLURM, Gnuplot
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Numerical Methods for Partial Differential Equations

Aachen, Germany

RWTH Aachen University

- Project 1: Finite Element Method in 1D
- Project 2: Finite Element Method in 2D
- Project 3: Finite Volume Method
- Project 4: Riemann Problem for Systems
- **CS Skills:** C++, Gnuplot, LaTeX, Linux, GNU Make, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, teamwork, time management

Fast Iterative Solvers

Aachen, Germany

RWTH Aachen University

- Project 1: Krylov Space Methods
- Project 2: Multigrid
- Project 3: Eigenvalue Computations
- **CS Skills:** C++, Gnuplot, LaTeX, Linux, GNU Make, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Parallel Computing

Aachen, Germany

RWTH Aachen University

- Homework 1: Mesh Visualization and Partitioning
- Homework 2: Explicit Finite-Element Solver for a Cylindrical Heat Conduction Problem
- Homework 3: OpenMP Finite-Element Solver for a Cylindrical Heat Conduction Problem
- Homework 4: MPI Finite-Element Solver for a Cylindrical Heat Conduction Problem
- **CS Skills:** C++, Gnuplot, LaTeX, Linux, GNU Make, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

C++

Aachen, Germany

RWTH Aachen University

- A1: Nullstellen eines quadratischen Polynoms
- A2: Funktionen: Wertetabelle, numerische Integration, Nullstellenbestimmung durch Bisektion
- A2+: Extremwertbestimmung
- A3: Arbeiten mit Feldern
- A3+: Doppelt verkettete Listen
- A4: Ein einfaches Adressbuch
- A5: Sudoku
- A6: Sudokus automatisch lösen
- A7: Bücherei
- **CS Skills:** C++, Gnuplot, LaTeX, Linux, GNU Make, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Introduction to Data Sciences *Aachen, Germany*

RWTH Aachen University

- Project 01:
  - Question 00 Preprocessing of the Dataset
  - Question 01 Insights into the Data
    - Part 01: Basic data analysis
    - Part 02: Basic visualization
  - Question 02 Decision Trees
  - Question 03 Classification Models and Prediction
    - Part 00: Preparing the data set
    - Part 01: Designing your variables and evaluation
    - Part 02: Model Selection
      - a) Regression:
      - b) SVM:
      - c) Neural Networks:
    - Part 03: Final conclusion
  - Question 04 Clustering
    - a) K-means Clustering
    - b) Visualization and Interpretation
- **CS Skills:** Python, Matplotlib, Gnuplot, LaTeX, Linux, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Machine Learning *Aachen, Germany*

RWTH Aachen University

- Exercise 1: Python Tutorial, Probability Density, GMM, EM
- Exercise 2: Least Square Linear Classifiers, SVM
- Exercise 3: AdaBoost
- Exercise 4: Backprop, SoftMax
- Exercise 5: Convolutional Neural Networks
- Exercise 6: Recurrent Neural Networks
- **CS Skills:** Python, TensorFlow Matplotlib, Gnuplot, LaTeX, Linux, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Advanced Machine Learning *Aachen, Germany*

RWTH Aachen University

- Exercise 1: Regression
- Exercise 2: Graphical Models and Exact Inference
- Exercise 3: Sampling and Digit Recognition
- Exercise 4: GAN and VAE
- Exercise 5: DQN and Reinforcement Learning
- **CS Skills:** Python, TensorFlow Matplotlib, Gnuplot, LaTeX, Linux, Zsh
- **Soft Skills:** google-fu, speed-reading, documentation , report writing, presentation, time management

Interests

Books math, computer science, classic literature, lexicography

Sports badminton, jump rope, calisthenics

"The only way to learn mathematics is to do mathematics."
Paul Halmos