

Amir FARIDI

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FIELDS OF INTEREST

- › Type Theory and Proof Assistants
- › Category Theory
- › Algorithm Design
- › Data Structures
- › Computability Theory
- › Complexity Theory

EDUCATION

2021-Current Bachelor of Science, Computer Science, University of Tehran. Current GPA : 18.23/20
2018-2021 High School Diploma, Mathematics and Physics, Shahid Beheshti gifted high school (SAMPAD) GPA : 4/4

RELATED SELECTED COURSES

- › Basic Programming - GPA : 19.5/20
- › Advanced Programming - GPA : 16/20
- › Data Structures and Algorithms - GPA : 19.7/20
- › Design and Analysis of Algorithms - GPA : 18/20
- › Principles of Computer Systems - GPA : 19.4/20
- › Fundamentals of Operating Systems - GPA : 18/20
- › Computational Neuroscience (Graduate Course) - GPA : 19.25/20
- › Machine Language and Assembly - GPA : 20/20
- › Fundamental of Combinatorics - GPA : 19/20
- › Fundamentals of Mathematics - GPA : 20/20
- › Fundamentals of Logic - GPA : 20/20
- › Introduction to Theory of Computation - GPA : 19/20
- › Theory of Computation - GPA : 20/20
- › Category Theory (Graduate Course) - GPA : 17.5/20
- › Compiler Design - GPA : 19.5/20
- › Type Theory (Graduate Course) - GPA : *Currently Taking*
- › Distributed Systems - GPA : *Currently Taking*

TEACHING AND EXPERIENCE

Sep 2023	Teaching Assistant of Dr. Abolfazl Nadi, DEPARTMENT OF MSCS, University of Tehran
Jan 2024	› Data Structures and Algorithms Time Complexity Stack Trees Heap Van Emde Boas Tree
Sep 2023	Teaching Assistant of Dr. Abdollah Safari, DEPARTMENT OF MSCS, University of Tehran
Jan 2024	› Probability 1 Random Variables Distribution Expected Value
Jan 2024	Teaching Assistant of Dr. Mojtaba Rafiee, DEPARTMENT OF MSCS, University of Tehran
Jul 2024	› Introduction to Theory of Computation DFA NFA PDA CFG Turing Machines
Sep 2024	Teaching Assistant of Dr. Shaghayegh Tavassoli, DEPARTMENT OF MSCS, University of Tehran
Jan 2025	› Data Structures and Algorithms Time Complexity Stack Trees Van Emde Boas Tree Heap Deap
Sep 2024	Teaching Assistant of Dr. Mohammad Ganjtabesh, DEPARTMENT OF MSCS, University of Tehran
Jan 2025	› Design and Analysis of Algorithms Time Complexity Divide & Conquer Dynamic Programming Greedy Theory of NP-Completeness
Sep 2024	Teaching Assistant of Dr. Majid Alizadeh, DEPARTMENT OF MSCS, University of Tehran
Jan 2025	› Theory of Computation URM Partial Recursive Functions Decidability Universal Function Reducibility Complexity Theory Cook-Levin Theorem Blum's Speed-up Theorem λ-Calculus
Jan 2025	Teaching Assistant of Dr. Ziaeetabar, DEPARTMENT OF MSCS, University of Tehran
Current	› Assembly Language ASM System Calls MS-DOS
Jan 2025	Teaching Assistant of Dr. Shaghayegh Tavassoli, DEPARTMENT OF MSCS, University of Tehran
Current	› Compiler Lexer Syntax Analyzer RDP LL(k) Type Checking Type Inference

PROJECTS AND RESEARCHES

FORMALIZATION OF CATEGORY THEORY IN Coq

2025

 [Source Github Repository](#)

An attempt to study the formalization of Category Theory in Coq as a case study to deepen my understanding of proper implementation techniques in Coq.

[Category Theory](#) [Coq](#)

SOFTWARE FOUNDATIONS SERIES

2025

 [github.com/AmirFaridi-2002/Software-Foundations](#)

Engaged with the 'Software Foundations' series to enhance proficiency in formal reasoning and proof development using Coq. Completed the first volume and all of its exercises, i.e. 'Logical Foundations'. Currently progressing through the third volume, 'Verified Functional Algorithms', focusing on the verification of functional algorithms. (The repository is private due to the book's policy against publicly sharing solutions to exercises.)

[Coq](#) [Formal Verification](#) [Functional Programming](#) [Algorithms](#)

COMPUTATIONAL NEUROSCIENCE

2024

 [github.com/https://github.com/AmirFaridi-2002/CNS](#)

Topics covered neural biophysics, synaptic plasticity, network connectivity, dynamics, learning, and using these ideas on visual cortex. The course combined theoretical foundations with practical modeling to gain insights into brain computation.

[LIF](#) [ELIF](#) [AELIF](#) [Synapses](#) [Decision Making](#) [STDP](#) [RSTP](#) [Lateral Inhibition](#) [k-Winner-Takes-All](#) [Homeostasis](#) [Gabor](#) [DoG](#)
[Spike Encodings](#) [Feature Extraction](#) [Image Processing](#)

COMPILER DESIGN

2024

 [github.com/AmirFaridi-2002/Compiler](#)

This repository contains the implementation of a custom compiler, developed as part of a project to explore language design and compilation techniques.

[ANTLR](#) [Name Analysis](#) [Type Analysis](#) [Context Free Grammars](#)

MSDOS - IMAGE PROCESSING USING ASSEMBLY LANGUAGE

2024

 [github.com/AmirFaridi-2002/Assembly](#)

The first folder in the repository contains my exploration of the MS-DOS v1.25 source code, specifically focusing on the COMMAND.ASM file. The code is written in assembly language. The other folder contains the homework for the course and the main project, a set of image-processing tools implemented as part of the Machine Language and Assembly course. The project applies low-level programming concepts to perform operations on images using assembly and system calls.

[MSDOS](#) [NASM](#) [System Calls](#) [Image Processing](#)

Pyxcel

2021

 [github.com/AmirFaridi-2002/Pyxcel](#)

Pyxcel is an interpreter for a custom language designed to create and manipulate tables. The project also includes web scraping functionality and server-side data management.

[Regex](#) [Threading](#) [Socket](#) [Pandas](#) [BS4](#) [Request](#) [Pillow](#)

SKILLS

★ Programming	Python - C/CPP - Coq - R - x86 Assembly - Golang
★ Framework/IDEs/Text Editors	VScode - Visual Studio - Jupyter - Vi/Vim/NVim
★ Documentation	L <small>A</small> T <small>E</small> X - Microsoft Office - Google Doc - Notion
★ Miscellaneous	Linux Professional Institute Certification Course(LPIC 1 & 2) - Fast Touch Typing

LANGUAGES

Farsi 

Azeri 

English 

German 

INTEREST & HOBBIES

- > Science : Psychology - Philosophy - Evolutionary Biology - Listening to Cybersecurity Podcasts
- > Games : Strategic Computer Games - Solving Criminal Cases
- > Sports : Jogging - Football - Fitness
- > Other : Reading, watching, playing, and listening to content related to The Lord of the Rings and other fiction by J.R.R. Tolkien