Erfan **Abedi**

COMPUTER ENGINEERING GRADUATE

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Research Interests

Quantum Computing, Quantum Information Science, Quantum Machine Learning, Quantum Networks, Quantum Cryptography, Quantum Biology.

Education

Amirkabir University of Technology (Tehran Polytechnic)   *Tehran, Iran*
BACHELOR OF SCIENCE IN COMPUTER ENGINEERING   *Sept. 2017 - Oct. 2021*
GPA: 3.36 (16.75/20)

Research Experience

QuOne Lab at Phanous Research and Innovation Centre (phanous.ir)   *Under the Supervision of*
                                                                          Dr. Salman Beigi
RESEARCH INTERN   *Jun. 2021 - Current*
• Researching Quantum Machine Learning methods.

Institute for Research in Fundamental Sciences (IPM)   *Under the Supervision of*
                                                                          Dr. Dara Rahmati
RESEARCH INTERN   *Summer of 2020*
• Researching Quantum Computing and Quantum Mechanics.

Notable Projects

QSVT in Qiskit (qiskithackathoneurope.bemyapp.com)   *IBM's Qiskit Hackaton Europe 2021*
TEAM MEMBER   *Spring of 2021*
• Quantum Singular Value Transformation (QSVT) is a framework that allows one to apply an arbitrary polynomial transformation to the singular values of a block-encoded unitary transformation.
• In its current form, this project contains QSVT-implemented quantum search, utilizing Fixed-point Amplitude Amplification.
• QSVT in Qiskit was selected as one of the top 3 winning teams of the Hackaton.

Maqenta (github.com/theerfan/Maqenta)   *AUT*
DEVELOPER   *Summer of 2021*
• Maqenta is a software for generating music using Quantum Machine Learning.
• Maqenta uses methods such as QLSTM and QGAN for generating music.
• Maqenta served as my BSc project.

Q (github.com/theerfan/Q)
RESEARCHER   *Jul. 2020 - Jan. 2021*
• Q is the progress of my early research experience in quantum computing and quantum mechanics.
• Q contains my solutions to Microsoft's quantum programming exercises in Q#.
• Q contains my solutions to the programming exercises of Prof. Peter Wittek's QML course in Qiskit.
• Q also includes the list of the quantum papers, books and online courses that I have gone and am going through.

AUT-ICPC information and registration website (ICPC.aut.ac.ir)   *AUT*
BACK-END DEVELOPER   *Summer of 2019*
• AUT-ICPC's website is used by the contest's participants to register in and gather more information about the contest.
• AUT-ICPC's website is built using Django on the back-end and React.JS on the front-end.
• AUT-ICPC's website uses technologies such as Ngnix, PostgreSQL, REST framework and Redis.

Online Courses

• Quantum Machine Learning - University of Toronto (Audited)

• Quantum Physics 1 - MIT (Audited)   —   Quantum Physics 2 - MIT (Audited)   —   Quantum Physics 3 - MITx on edX (In Progress)

• Quantum Cryptography - TU Delft (Audited)

• Differential Equations - MITx on edX (Certificate: github.com/Erfan-Online/MIT-18.03)

- The Fourier Transform and its Applications - Stanford University (Audited)
- Statistics 110: Probability - HarvardX on edX (In Progress)

Teaching Experience

Teaching Assistant, Signals and Systems, under the supervision of **Dr. Mehdi Rasti**. *Fall of 2020*
    Designing and grading assignments and projects, providing extra educational material.

Teaching Assistant, Microprocessors and Assembly Language, under the supervision of **Dr. Hamed Farbeh**. *Fall of 2020*
    Designing lab assignments and projects, providing supplementary learning resources.

Teaching Assistant, Computer Architecture and Organization, under the supervision of **Dr. Hamed Farbeh**. *Fall of 2020*
    Designing and grading assignments and projects.

Teaching Assistant, Programming Languages, under the supervision of **Dr. Mehran S. Fallah**. *Spring of 2020*
    Designing lab assignments and projects, providing supplementary learning resources.

Teaching Assistant, Advanced Programming, under the supervision of **Dr. Amir Kalbasi & Eng. Ehsan Edalat**. *Spring and Fall of 2019, Spring of 2020*
    Designing and grading assignments and projects, assisting lab sessions.

Teaching Assistant, Fundamentals of Computer and Programming, under the supervision of **Dr. Ehsan Nazerfard**. *Fall of 2019*
    Designing and grading assignments and projects, conducting TA sessions.

Honors & Awards

2017	**Top 0.8% place**,	The Iranian Nationwide University Entrance Exam for BSc. in Math & Engineering.
2015, 2016	**Acceptance in the 1st stage**,	Iran's Chemistry Olympiad.
2013	**1st place**,	Allameh Helli 3's 5th HelliChem. (Practical chemistry contest)

Extracurricular Activities

Students' Scientific Chapter of AUT's Department of Computer Engineering (CEIT-SSC.ir)

BOARD MEMBER & HEAD OF CONTESTS *Mar. 2019 - Sept. 2020*

- Organized and provided technical means for the 6th Amirkabir Programming League.
- Organized the 1st Amirkabir Artificial Intelligence Summer Summit. (AAISS.ceit.aut.ac.ir)
- Organized and provided technical means for the 19th Amirkabir ICPC. (ICPC.aut.ac.ir)
- Organized the 11th Amirkabir Linux Festival. (LinuxFest.aut.ac.ir/2019)
- And many more talks, seminars and workshops.

Programming Languages and Frameworks

Programming Languages

PYTHON · C/C++ · RUST · Q# · C# · GO · JAVA · JAVASCRIPT · TYPESCRIPT · MATLAB · MATHEMATICA RACKET · OCAML

Frameworks and Technologies

CIRQ · QISKIT · PENNYLANE · PYTORCH · NUMPY · SCIPY · PANDAS · CUDA · OPENMP · DOCKER · DJANGO · POSTGRESQL · MONGODB · MYSQL · REDIS · RABBITMQ · KOA.JS · EXPRESS.JS · VUE.JS · REACT.JS · REST · GRAPHQL · ARDUINO · LATEX

Languages

Persian

Native

English

Bilingual Proficiency
- TOEFL iBT: 113 (Reading: 30, Listening: 28, Speaking: 28, Writing: 27)
- GRE General: V155, Q164, AW4.0

German

Intermediate

References

Salman Beigi, Associate Professor, School of Mathematics at IPM.
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Hamed Farbeh, Assistant Professor, CE Department at AUT.
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Ehsan Nazerfard, Assistant Professor, CE Department at AUT.
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