

# ALIREZA SALEMI

✉ alirezasalemi7@gmail.com | 🎓 Alireza Salemi | 🌐 alirezasalemi7 | 📞 +98 939 774 5850  
🌐 alirezasalemi7.github.io | 🏢 Dept of ECE, Faculty of Engineering, University of Tehran, Iran

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## Education

### University of Tehran [website]

Tehran, Iran

*B.Sc. student in Computer Engineering*

*Sep. 2017 – present*

- Ranked 1<sup>st</sup> among 103 Computer Engineering students
- GPA: 19.67/20 (4/4)
- Relevant Course Works:
  - \* Artificial Intelligence (20/20)
  - \* Probability and Statistics (20/20)
  - \* Analysis of Algorithms (20/20)
  - \* Advanced Programming (20/20)
  - \* Data Structures and Algorithms (20/20)
  - \* Engineering Mathematics (20/20)

### Imam Khomeini High School

Bushehr, Iran

*Diploma in Mathematics and Physics Discipline*

*Sep. 2013 – Jun. 2017*

- Ranked 1<sup>st</sup> among 63 Mathematics and Physics Discipline students
  - GPA: 19.83/20
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## Research Interests

- NLP
  - Neural Networks
  - Data Science
  - Software Systems
  - Machine Learning
  - Computer Vision
  - Mathematics
  - Social Science
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## Publications

- [1] *ARMAN: Pre-training with Semantically Selecting and Reordering of Sentences for Persian Abstractive Summarization [paper]*  
**Alireza Salemi**, Emad Kebriaei, Ghazal Neisi Minaei and Azadeh Shakery  
To appear in proceedings of **EMNLP-2021**
  - [2] *UTNLP at SemEval-2021 Task 5: A Comparative Analysis of Toxic Span Detection using Attention-based, Named Entity Recognition, and Ensemble Models [paper]*  
**Alireza Salemi**, Nazanin Sabri, Emad Kebriaei, Behnam Bahrak and Azadeh Shakery  
Proceedings of **SemEval-2021 co-located with ACL-IJCNLP-2021**
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## Research Experiences

### Pre-training of Language Models for Translation

UT, Iran

*Under Supervision of Prof. [Yadollah Yaghoobzadeh](#) and Prof. [Azadeh Shakery](#)*

*Oct. 2021 – Present*

- This research aimed to develop new Transformer-based language models that perform specifically well in translation tasks. We want to design a pre-training objective to use monolingual texts from different languages and produce a pseudo-translated text of each language pair. Indeed, we will not use any parallel data for the pre-training of models.

### Pre-training of Language Models for Summarization [repository]

UT, Iran

*Under Supervision of Prof. [Azadeh Shakery](#)*

*Jan. 2021 – Oct. 2021*

- This research aimed to develop new Transformer-based language models that perform specifically well in summarization. We suggested three novel pre-training objectives and a new abstractive summarization dataset for the Persian language. Furthermore, we tested our models in few-shot and zero-shot situations too. Our models get SOTA results in all available Persian summarization datasets and many NLU tasks.

- Toxic Span Detection [repository]** UT, Iran  
*Under Supervision of Prof. Behnam Bahrak and Prof. Azadeh Shakery* Aug. 2020 – Feb. 2021
- This research aimed to develop new machine learning models to annotate toxic words of a tweet. We used statistic-based and keyword-based methods as traditional methods of detecting toxicity and compared them with new neural techniques like attention-based and NER-based models.
- Model Learning in Software Product Lines [repository][website]** TeIAS, Iran  
*Under Supervision of Prof. Mohammad Mousavi and Prof. Hossien Hojjat* Jul. 2020 – Dec. 2020
- Ensuring software correctness is an essential discipline of software engineering. Many quality assurance techniques require a model describing the system's behavior. In this research, we survey various methods of extracting behavioral models from software systems, focusing on software product lines.
- Decentralized Enforcement in Message-Based Systems [repository]** UT, Iran  
*Under Supervision of Prof. Fatemeh Ghassemi* Jun. 2020 – Oct. 2020
- In message-based systems, particular ordering of some messages may violate the desired properties such as confidentiality. To make such systems safe, we propose a confidentiality-based runtime enforcement decentralized algorithm that, given an automata-based specification of unwanted message sequences, prevents specific unwanted sequences messages from being sent.

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## Notable Course Projects

- AirHockey, an online multiplayer game for android [repository]** Spring 2021
- Course: Cyber Physical Systems
  - Tools: Java, Android SDK, Python
  - Description: *AirHockey is an online multiplayer distributed android game written using java and android SDK. This application uses Bluetooth to connect devices and simulates a real air hockey game.*
- LOGHMEH, an online food delivery website [frontend][backend]** Spring 2020
- Course: Internet Engineering
  - Tools: Java, Spring, Maven, Javascript, react, Docker, kubernetes, mysql
  - Description: *LOGHMEH is an online food delivery website written using Java and Spring for backend and javascript and React-Web for frontend. Also, Docker and Kubernetes helped to increase the portability of this application.*
- Acton, an actor based compiler [repository]** Fall 2019
- Course: Programming Languages and Compilers
  - Tools: Java, Gradle, Antlr, Jasmin
  - Description: *Acton is an actor-based programming language written with Java and produces Java classes using Jasmin that are runnable with JRE. This is a powerful tool to simulate parallel systems.*
- FPU, a floating-point processing unit for division and multiplication [repository]** Fall 2019
- Course: Computer Aided Design
  - Tools: Verilog, Python, Modelsim, Vivado
  - Description: *FPU is a floating-point processing unit with division and multiplication commands for single and double floating-point numbers. This module that was written with Verilog and synthesized with Vivado could be used as co-processors.*

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## Awards & Honors

- The Best Thesis (Final Project) Award in Computer Engineering [link]** UT, Iran  
*B.Sc. thesis was selected as the best thesis in the spring 2021 semester* Spring 2021
- F.O.E (Faculty of Engineering) Award** UT, Iran  
*Ranked 1<sup>st</sup> among all of 103 Computer Engineering students in 2018 and 2019* Fall 2018, 2019
- University of Tehran Scholarship** UT, Iran  
*Received scholarship from the UT Sponsors Foundation as an exceptional talent* Fall 2017 - 2020
- University Entrance Examination** Iran  
*Ranked as top students in at national entrance examination to universities in 2017* Fall 2017
- Ranked 217<sup>th</sup> (national) and 59<sup>th</sup> (regional) among more than 148k candidates

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## Teaching Assistantship

### Artificial Intelligence

- Instructor: Prof. Yadollah Yaghoobzadeh and Dr. Hakimeh Fadaei
- Semesters: Fall 2020, Spring 2021
- Role: Supervisor, responsible for projects

### Database Design

- Instructor: Prof. Azadeh Shakery
- Semesters: Fall 2020
- Role: TA, responsible for Homework about normal forms in database

### Programming Languages and Compiler Design

- Instructor: Prof. Fatemeh Ghassemi
- Semesters: Fall 2020, Spring 2021
- Role: Chief TA, responsible for course projects and Homeworks

### Design and Analysis of Algorithms

- Instructor: Prof. Hamid Mahini
- Semesters: Spring 2020
- Role: TA, responsible for Homework about graphs and related algorithms

### The Theory of Formal Languages and Automata

- Instructor: Prof. Hossien Hojjat
- Semesters: Spring 2020, Fall 2020, Spring 2021
- Role: TA, responsible for Homework about parsing algorithms and normal forms

### Engineering Mathematics

- Instructor: Prof. Mahdi Tale Masouleh
- Semesters: Spring 2020
- Role: TA, responsible for Homework about mapping and its applications in solving problems

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## Skills & Qualities

### Academic Skills

*Skills that are related to my education and work*

- Programming Languages: Python, Java, C/C++, R, Dart, Javascript, Verilog HDL
- AI & Visualization Frameworks: Tensorflow, Keras, Pytorch, Numpy, Pandas, Seaborn, Scikit-Learn, Matplotlib
- Other Frameworks: Flutter, React-web, Express, Spring
- NLP Tools: NLTK, Spacy, Gensim, Transformers
- Databases & Related Tools: MySQL, PostgreSQL, Neo4j, Redis, Elastic Search
- Other Tools: Modelsim, Quartus, Vivado, Multisim, Proteus, Android Studio, Git,  $\LaTeX$ , Antlr4, Docker, Kubernetes, Maven, Gradle

### Personal Qualities

*Qualities that are related to my personal abilities*

- Organized
- Punctual
- Diligent
- Creative
- Flexible
- Team Player
- Fast Learner
- Problem Solver
- Ethical
- Reliable

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## Languages

Persian: Native

English: Fluent (TOEFL score: 113/120, Reading: 30, Listening: 28, Speaking: 26, Writing: 29)

Arabic: Familiar

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## References

Available upon request.