Masoud SADRNEZHAAD
PhD Student at Linköping University

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I am pursuing a PhD with the Complex Software-Intensive Systems Research Group at Linköping University. My research explores the intersection of Large Language Models and Cyber-Physical Systems. Before starting my PhD, I worked as a web developer and software architect, gaining deep expertise in Python, serving as a technical lead, acquiring experience across all phases of the Software Development Life Cycle, conducting research on recommender systems, teaching programming across various specializations, and administrator of Linux Servers. Additionally, I am interested in free knowledge, western philosophy and art films.

Competencies: | Python Programming | Django | Software Architecture | Recommender Systems | Linux | Teaching |

🎓 EDUCATION

Oct 2024 – Now
Doctor of Philosophy - PhD in Computer Science and Engineering
Location: Linköping University, Linköping, Sweden
> **Advisor:** 🔗 Prof. Daniel Varro

Sep 2019 – Oct 2022
Master of Science - MSc in Information Technology (Subdiscipline: Enterprise Architecture)
Location: Shahid Beheshti University, Tehran, Iran (Ranked among the top 6 universities in Iran by QS 2024)
> **GPA:** 19.46 / 20 (1st Rank)
> **Thesis Title:** Using empirical data to support technology selection in software architecture decision-making
> **Advisor:** 🔗 Dr. Sadegh Aliakbary
> **Related Coursework:** Enterprise Architecture (20/20), Software Architecture (20/20), Business Processes Reengineering (20/20), Decision Support Systems (20/20), Self-Adaptive and Self-Organizing Systems (19.75/20), Advanced Software Engineering (19.5/20), Enterprise Resource Planning (19.5/20)
> **Activities and Societies:** I coordinated with the executive team and the Third National Conference on Enterprise Architecture workshop lecturers. (🔗 Team Page in Conference Website)
> **Teaching Assistant (TA):** Advanced Software Engineering course instructed by Prof. Fereidoon Shams Aliee during the fall semester of 2021.

Sep 2012 – Jun 2018
Bachelor of Science - BSc in Computer Engineering (Subdiscipline: Software Engineering)
Location: Sharif University of Technology, Tehran, Iran (Ranked 334th university in the world by QS 2024)
> **Related Coursework:** Software Engineering (17.7/20), System Analysis and Design (17.7/20), Information Technology Ethics (20/20), Information Technology (17.5/20), Software Engineering Lab (20/20)
> **Activities and Societies:** Besides building a website using MediaWiki, I wrote articles for 🔗 Rayanesh, the department's magazine. I also initiated the 🔗 Free Software Users Group. I was the technical staff of the Sharif AI Challenge 2015, and in this position, I built 🔗 a QA website for the questions of the participants about the competition. I also installed and configured its server to run contestants' submitted codes.
> **Teaching Assistant (TA):**

Course Title	Instructor	Semester
System Analysis and Design	Seyed Ebrahim Abtahi	🔗 Fall 2017, 🔗 Spring 2017, 🔗 Fall 2016
	Dr. Mehraneh Shantiaei	Spring 2017
Advanced Programming in Java	Dr. Salman Marvasti	🔗 Fall 2015
Technical Presentation	Dr. Ali M. A. Hemmatyar	Fall 2014

🔬 RESEARCH EXPERIENCE

Oct 2024 – Now
PhD Student, COMPLEX SOFTWARE-INTENSIVE SYSTEMS RESEARCH GROUP, Linköping, Sweden

| Large Language Models | Simulation | Cyber-Physical Systems | Quality Assurance |

Jul 2020 – Oct 2022
Graduate Researcher, DATA-ORIENTED RESEARCH FOR SOFTWARE ANALYTICS LAB, Tehran, Iran
> Developed two recommender systems to help library selection. One used recent deep-learning algorithms, while the other utilized content-based recommenders to alleviate the cold start problem.
> Using regex patterns in BigQuery, extracted GitHub data (< 3 mins), filtered incorrect libraries based on Maven conventions, and built samples using repository info (stars, branches, authors, commits, lifetimes, etc.).
> Extracted project topics and descriptions from GitHub API and processed them to complete tags.
> Designed an interactive dashboard using Data Studio for seamless data exploration.

| LaTeX | Recommender System | Deep Learning | Python | Google Cloud | Google Colab | BigQuery | Data Studio | Visual Paradigm |

Sep 2016 Jul 2018	Undergraduate Research Assistant, Intelligent Software Engineering Lab, Tehran, Iran ❯ The acknowledgment section of the article "Cross-project code clones in GitHub" shows my name as I contributed to the programming parts. ❯ My contribution included a JetBrains plugin to keep track of user actions and a tool to detect potential bugs in source code using GitHub projects' history. It finds all commits that were later fixed in another commit. LaTeX · GitHub Datasets · Java Standard · pygit2 · gensim · nltk · GHTorrent · code clone detection · JGit · JetBrains Plugin · SQL

💻 Work Experience

Nov 2022 Present	Technical Lead & DevOps, 🔗 Hummers Leasing and 🔗 Hummers Broker, Tehran, Iran ❯ Formed a high-performing technical team after systemically evaluating 500+ individuals in various areas. ❯ Maintained communication with stakeholders to thoroughly grasp project requirements, progress, and risks. ❯ Implemented automation scripts for DevOps processes, including email server and GitLab administration. ❯ Implemented enterprise-level web software for leasing management using Django and Bootstrap. Team Leadership · SDLC · Nginx · Redis · Linux · ATS · Recruitment · Django · Zimbra Mail Server · HTMX · PostgreSQL · GitLab · CoCalc · Moodle · Selenium · Agile Coaching
Jul 2017 Present	Technical Lead & Web Developer, 🔗 Connect ISTI, Tehran, Iran ❯ Developed web software using Django, implemented black box regression tests, administrated Linux servers, and established continuous delivery pipeline and data backup strategies. ❯ Created detailed technical documents for various stakeholders and documented recruitment procedures. ❯ Collected requirements, analyzed them, and divided them into actionable implementation tasks. Kanban · System Analysis · Software Architectural Design · Django · Semantic-UI · PyCharm · HTML5 · CSS3 · JavaScript
Aug 2018 Jan 2021	IT Consultant, 🔗 Metraj, Tehran, Iran ❯ Managed the company's booth at the Sharif Job Fair Exhibition 2018, reengineered their legacy web software, gathered updated requirements, and wrote system analysis documents. ❯ Installed and maintained issue tracking and project management systems for software development projects and wiki software for writing tutorials and meeting agendas and trained the development team on various topics like Software Architecture, System Analysis, Software Testing, and Version Control. ❯ Wrote scripts to extract data on real estate transactions from the Ministry of Roads & Urban Development website, which helped the company estimate house prices. Requirement Gathering · JetBrains YouTrack · DokuWiki · Web Scraping · Linux Administration · Documentation · GitLab
Sep 2012 May 2016	Linux System Administrator, 🔗 Behestan Rayan, Tehran, Iran ❯ Worked for the data center, R&D, and Marketing departments and fulfilled projects for clients, such as the Municipal Employees Fund Institution and Kosar Credit Institution. ❯ Setup, hardening, and performance tuning of various Linux servers, including Debian, Ubuntu, and CentOS. ❯ Lectured in Big Data and Relational Database and Filing approaches. (🔗 Course Page) ❯ Implemented, optimized SEO, and improved the performance of the company and its client's multilingual websites based on their specific requirements, using web frameworks. Bind · Zimbra Mail Server · Cacti · VMware ESX · HP G9 Servers · Apache · MySQL · Bash · Firewalls · Joomla · SEO
Sep 2010 Dec 2017	Founding Member (Volunteer), 🔗 Libre/Free Knowledge Foundation, Tehran, Iran ❯ Organized the Software Freedom Day (SFD) conference held in Tehran in 🔗 2013, 🔗 2015, and 🔗 2016. More than a thousand people from all over the country participated. Attendance was completely gratis and free for everyone, and donations from the local community provided most of the conference costs. ❯ Through these three years, I accepted 41 workshops and 35 speeches as chairman of the referee committee. There were big media impressions, including social media, websites, newsletters, and television. ❯ Coordinated weekly meetings about philosophical aspects of Free Knowledge since July 2013. Maintained the wiki, edited and wrote papers on the wiki or translated the various selected articles, edited videos, and composed subtitles for chosen speech videos from the prominent people of the free software movement. Event Management · FOSS Philosophy · Translation · Gimp · Adobe Premiere · MediaWiki

🏅 Honors & awards

Jul 2019	**Ranked 5th**, Nationwide Masters University Admission Exam among more than 15000 participants.
Sep 2014	**23rd Team**, Sharif 5th Cyber Security and Hacking Competition (CTF) among over 800 teams. 🔗 Finals, 🔗 Quals
Nov 2013	**16th Team**, Sharif 4th Cyber Security and Hacking Competition (CTF) among over 100 teams. 🔗 Finals, 🔗 Quals

❝ References

Seyed Ebrahim Abtahi *Assistant Professor* Sharif University of Technology @ abtahi@sharif.edu	**Hossein Asadi** *Full Professor* Sharif University of Technology @ asadi@sharif.edu	**Fereidoon Shams Aliee** *Full Professor* Shahid Beheshti University @ f_shams@sbu.ac.ir

💼 PROJECTS

ARCHAIDE (COURSE PROJECT)   JUN 2020 - AUG 2020

🔗 github.com/smmsadrnezh/archaide   🔗 https://archaide.sadrnezhaad.com

It allows software architects to create, visualize, and evolve architecture, analyze trade-offs, and propose tactics and patterns.

`Ontology Engineering` `SPARQL` `OWL` `RDF` `Django`

BITERVAN ONLINE SHOP (FREELANCE CONTRACT)   JUN 2016 – OCT 2016

🔗 https://bitervan.com

Bitervan is an online store where I have been involved from the beginning. We acquired some components and built others.

`Magento` `Software Acquisition`

💻 TEACHING EXPERIENCE

> **Extracurricular Instructor:**
> > Taught 200+ students with high satisfaction rates: 99% believe the instructor knows the subject well, 98% find the course well-organized, 97% enjoy the current content and respectful, friendly style, and 91% appreciate prepared class plans.
> > Developed courseware that includes announcements, resources, topics, calendars, assignments, and code samples.

Course Title	Organizer	Semesters
Python Programming	Sharif University of Technology - 🔗 Sharif Rayan Academy	Spring 2019, Winter 2020
	University of Tehran - Cultural Education and Development Centre	Fall 2018
	Saipa Training Center	Summer 2019
	🔗 MapsaHR Company	Fall 2021
	Shahid Beheshti University - Culture Home Center	Summer 2017, Fall 2017, Winter 2018, Summer 2018, Fall 2018, Winter 2019, Summer 2019
Front-end Web Development		Summer 2016, Fall 2018, Winter 2019, Summer 2019
Linux System Administration		Fall 2016
Web Scraping in Python		Winter 2018

> **Seminars & Lectures:**

Dec 2020	**Animating and Simulating Business Processes to Redesign Them**, Informatics Society of Iran
Apr 2020	**Semantic Storage and Retrieval Using the Resource Description Framework**, Shahid Beheshti University
Jan 2020	**Research Areas in Software Engineering that Address Self-Adaptive and Self-Organizing Systems**, Faculty of Computer Science and Engineering, Shahid Beheshti University
Dec 2019	**Simulating Self-Adaptive Software Architecture with the SWIM Scenario in the Rainbow Framework**, Faculty of Computer Science and Engineering, Shahid Beheshti University
Dec 2017	**What is Net Neutrality, and Where Does it Come From?**, Sharif University of Technology
Sep 2017	**A Comparative Introduction to MV* Patterns and Pattern Families**, Tehran Linux Users Group, Univ. of Tehran
Aug 2017	**Managerial Anti-Patterns in Software Engineering**, Tehran Linux Users Group, University of Tehran
Jul 2017	**Architectural Anti-Patterns in Software Engineering**, Tehran Linux Users Group, University of Tehran
Mar 2017	**Bad Smells and How to Fix Them**, Tehran Linux Users Group, University of Tehran
Feb 2017	**Concepts and Implementation of Web Crawlers**, Tehran Linux Users Group, University of Tehran
Oct 2016	**From Permission Culture to Free Culture: How Law Constrains Culture and Creativity (Software Freedom Day)**, Isfahan University
Sep 2016	**An Introduction to ZeroNet and the Decentralized Web (Software Freedom Day)**, Kharazmi Hall, Computer Engineering Department, Sharif University of Technology
Jul 2016	**Design and Architecture of Amazon Cloud Services (AWS)**, Tehran Linux Users Group, University of Tehran
May 2016	**Mezzanine Content Management System Workshop (Pycon)**, Iran University of Science and Technology
Feb 2013	**Some Examples of Social Semantic Web**, Tehran Linux Users Group, Information Technology Organization

🎓 CERTIFICATIONS

April 2022	Advanced Recommender Systems, EIT Digital, Politecnico di Milano (🔗 Credential ID: 8CNPKV3AF6SN)
Dec 2021	Matrix Factorization and Advanced Techniques, University of Minnesota (🔗 Credential ID: NFEC4ZRN7LSY)
Dec 2021	Recommender Systems: Evaluation and Metrics, University of Minnesota (🔗 Credential ID: G9K6H8N7XAMH)
Nov 2021	Nearest Neighbor Collaborative Filtering, University of Minnesota (🔗 Credential ID: NYBVAGVFSLGE)
Nov 2021	Introduction to Recommender Systems: Non-Personalized and Content-Based, University of Minnesota (🔗 Credential ID: TDBAGF4555QA)
Feb 2021	Introduction to Philosophy, The University of Edinburgh (🔗 Credential ID: W33KQMPQ3GBY)
Jan 2021	Data Science Math Skills, Duke University (🔗 Credential ID: X59FRV9J867L)
Dec 2010	Certificate in English As A Foreign Language, Cavendish College London

🔤 LANGUAGES

- Native Persian speaker and proficient in English
- TOEFL iBT Score: 95

➕ MISCELLANEOUS

Court tennis, Art films, Western philosophy, Free knowledge, Classical and Middle Eastern traditional music