

Siamak Farshidi



Contact

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 Utrecht, Netherlands

Research interests

software engineering,
 knowledge engineering,
 recommender systems,
 conceptual modeling

Teaching interests

software engineering,
 data science,
 knowledge engineering,
 research methods

Supervision

2 PhD students,
 8 Master students,
 2 undergraduate students

Citation metrics

H-index: 5
 i10-index: 5

Skills/expertise

Python, C++, Java, PHP
 web3, solidity
 SQL/NoSQL databases

Languages

English ●●●●●●
 Dutch ●●●●●●
 German ●●●●●●
 Persian ●●●●●●

Vision

My research supports research communities with cross-domain knowledge discovery, sharing, and recommendations based on FAIR principles. My research focuses on software engineering, conceptual modeling, knowledge engineering, and decision support systems. I teach to inspire students and enable learning from practice, experience, and research.

Research experience

ENVRI-FAIR project

[A 3-year postdoc position]

Aug'20–present

Postdoctoral Researcher

University of Amsterdam, the Netherlands

- Investigating decentralized cross-domain search engines
- Working on semantic linking for enabling IT asset discovery and recommendations across data sources
- Capturing knowledge regarding BPMN patterns for developing decentralized applications
- Researching cross-domain dataset indexing and ranking approaches
- Assessing the data provenance and readiness withing the context of research infrastructures

SecureSECO project

Jun'20–present

Senior Researcher

Utrecht University, the Netherlands

- Designing a model-driven development platform for generating decentralized applications
- Built a decision model for Decentralized Autonomous Organization (DAO) platform selection

AMUSE project

[A 4-year Ph.D. position]

May'16–May'20

Research Assistant

Utrecht University, the Netherlands

- Designed and implemented a decision support system for supporting decision-makers with multi-criteria decision-making problems in software production
- Built decision models for selecting database management systems, cloud service providers, blockchain platforms, programming languages, model-driven development platforms, and architectural patterns

Metaheuristic search for global optimization

Oct'13–Sep'14

Research Assistant

Shiraz University, Iran

- Designed and implemented a hybrid algorithm based on particle swarm optimization with two genetic operators for the multi-mode resource constraint scheduling problem
- Investigated the efficiency of the metaheuristic algorithms, such as Hill climbing, Simulated annealing, Genetic Algorithm, Artificial Ant Colony, and Particle Swarm optimization to solve the vehicle routing problem.

Education

- May'16–Jul'20 **Ph.D. in Computer Science** Utrecht University, the Netherlands
- Dissertation: Multi-Criteria Decision-Making in Software Production
- Sep'12–Sep'14 **M.Sc. in Software Engineering** Shiraz University, Iran
- Thesis: A hybrid algorithm based on PSO and genetic operators for the MRCPSP
- Sep'08–Jun'11 **B.Sc. in Software Engineering** ADIBAN higher education institute, Iran
- Sep'06–Feb'08 **AS in Computer Software** Technical college of Shahid Shamsipour, Iran
- Sep'02–Feb'05 **Diploma in Computer Software** Technical and Vocational Training Institute of Shahid Karimi, Iran

Teaching experience

- Nov'20–Dec'20 **Data management service DevOps** University of Amsterdam, the Netherlands
- Duties: assisting with the course design and evaluations
 - Class Size ≈200 students
- Mar'19–May'19 **Software architecture** Utrecht University, the Netherlands
- Duties: assisting with the workshops and evaluations
 - Class Size ≈40 students
- Sep'16–Sep'19 **Data modeling** Utrecht University, the Netherlands
- Duties: assisting with the workshops and evaluations
 - Class Size ≈180 students
- Apr'17–Apr'18 **Information Systems** Utrecht University, the Netherlands
- Duties: assisting with the workshops and evaluations
 - Class Size ≈180 students

Guest lectures

- Nov'17 **Interactie-technologie** Utrecht University, the Netherlands
- Lecture title: Multi-Criteria Decision-Making in Software Production
- Nov'18 **Product software** Utrecht University, the Netherlands
- Lecture title: Enabling Technology: Blockchain decision support for Product Software Employees
- Nov'19 **Product software** Utrecht University, the Netherlands
- Lecture title: Model-Driven Engineering for Software Production
 - Lecture title: Decision Support for Product Software Employees

Supervision

Mar'21–present **Master Thesis** University of Amsterdam, the Netherlands

- Context: ENVRI-FAIR project
- Project: Entity alignment across data sources to enable IT asset discovery and recommendations
- Description: This study proposes a recommendation system for suggesting semantically similar software assets, such as components, in large software-intensive development projects. The recommender system should inform software developers in a DevOp team regarding potential similar developed components which are developed or under development by other teams. The two possible use cases of the proposed recommendation system are (1) developers decommissioning old assets and seeking a possible replacement and (2) product owners informing other teams about a malfunction affecting their operations.

Mar'21–present **Master Thesis** University of Amsterdam, the Netherlands

- Context: ENVRI-FAIR project
- Project: Cross domain software asset discover and sharing
- Description: This thesis investigates potential software assets, such as web APIs and COTS components, indexing techniques to ingest data into the knowledge base of the knowledge management system we are working on at UvA for ENVRI-FAIR research communities. We will index software assets of research infrastructures in the context of the ENVRI-FAIR project and develop a search engine and ranking algorithm to make the software assets Findable, Accessible, Reusable, and Iteroprable (FAIR). The results will be evaluated through a set of experiments and case studies.

May'21–present **Master Thesis** Utrecht University, the Netherlands

- Context: SecureSECO project
- Project: A model-driven development platform for generating decentralized applications
- Description: This study introduces a model-driven development platform for generating smart contract-based decentralized applications according to their business models. The proposed platform enables citizen developers to design, deploy and simulate the behavior of decentralized applications on actual permissioned or permissionless blockchain systems.

May'21–Jul'21 **Bachelor Thesis** University of Amsterdam, the Netherlands

- Context: ENVRI-FAIR project
- Project: Indexing cross-domain datasets in an automated and scalable search engine using metadata normalisation and transformation
- Description: In this thesis, we investigated potential dataset indexing techniques to ingest data into the knowledge base of the knowledge management system we are working on at UvA for ENVRI-FAIR research communities. We indexed more than 100K datasets from 26 research infrastructures in the context of the ENVRI-FAIR project and developed a search engine and ranking algorithm to make the datasets FAIR. Finally, we have assessed the coverage and usefulness of the approach based on domain expert evaluation.

Jun'20–Apr'21 **Ph.D. Project** Utrecht University, the Netherlands

- Context: SecureSECO project
- Project: A decision model for decentralized autonomous organization platform selection
- Description: We have developed a theoretical framework to assist software engineers with a set of Multi-Criteria Decision-Making (MCDM) problems in software production. This study presents a decision model as an MCDM problem for the decentralized autonomous organization platform selection problem to systematically capture knowledge regarding such platforms and concepts. We conducted three industry case studies in the context of three decentralized autonomous organizations to evaluate the effectiveness and efficiency of the decision model in assisting decision-makers. The case study participants declared that the decision model

provides significantly more insight into their selection process and reduces the cost of the decision-making process.

Oct'20–Feb'21 **Ph.D. Project**

Utrecht University, the Netherlands

- Context: SecureSECO project
- Project: A distributed infrastructure for providing trust in the software ecosystem
- Description: The software ecosystem is a trust-rich part of the world. Collaboratively, software engineers trust major hubs in the ecosystem, such as package managers, repository services, and programming language ecosystems. However, trust entails the assumption of risks. This study laid out the risks we are taking by blindly trusting these hubs when using information systems. Secondly, we presented a trust-recording mechanism in the software ecosystem that mitigates the presented risks.

Aug'19–Jan'20 **Master Thesis**

Utrecht University, the Netherlands

- Context: AMUSE project
- Project: A decision model for programming language ecosystem selection
- Description: In this study, we built a decision model for the programming language ecosystem selection problem. The decision model has been evaluated through seven real-world case studies at seven software development companies. The case study participants declared that the approach provides significantly more insight into the programming language ecosystem selection process and decreases the decision-making process's time and cost.

Apr'18–Oct'18 **Capita Selecta (a master student)**

Utrecht University, the Netherlands

- Context: AMUSE project
- Project: Systematic literature study regarding architectural patterns
- Description: This study reported on a systematic literature review, intending to build a decision model for the architectural pattern selection problem. Moreover, twelve experienced practitioners at software-producing organizations evaluated the usability and usefulness of the extracted knowledge. An overview was provided of 29 patterns and their effects on 40 quality attributes. Furthermore, we reported in which systems the 29 patterns were applied and in which combinations. We investigated the potential trends among architects to select patterns.

Feb'18–Aug'18 **Master Thesis**

Utrecht University, the Netherlands

- Context: AMUSE project
- Project: A decision model for blockchain platform selection
- Description: In this thesis, the blockchain platform selection process is modeled as an MCDM problem that deals with evaluating a set of alternatives and taking into account a set of decision criteria. Moreover, we introduced a decision model for the blockchain selection problem based on the technology selection framework. The decision model has been evaluated through three real-world case studies at three software-producing organizations.

Feb'17–Mar'18 **Capita Selecta (two master students)**

Utrecht University, the Netherlands

- Context: AMUSE project
- Project: A decision model for cloud service provider selection
- Description: In this study, we built a decision model for choosing the most suitable Infrastructure-as-a-Service cloud providers. Three case studies and twelve experts participated in the research to evaluate the decision model and assisting us with the data collection process. The case study participants confirmed that the approach increases insight into the selection process provides a richer prioritized option list than if they had done their research independently, and reduces the time and cost of the decision-making process.

- Context: AMUSE project
- Project: Business models for decision support in software production
- Description: This study investigated potential business models that can be considered to value the acquired knowledge regarding decision models in software production. The main goal was to find a set of criteria to make a decision support system suitable and available for commercial and societal use. Such factors could support entrepreneurs with translating their decision support system into a competitive and commercial decision-making tool in the software production domain.

Publications

Journal Articles

- ▶ Baninemeh, Elena, Siamak Farshidi, and Slinger Jansen (2021). "A Decision Model for Decentralized Autonomous Organization Platform Selection". In: (Submitted).
- ▶ Farshidi, Siamak, Slinger Jansen, and Mahdi Deldar (2021). "A decision model for programming language ecosystem selection: Seven industry case studies". In: *Information and Software Technology (IST)* 139, p. 106640.
- ▶ Farshidi, Siamak, Slinger Jansen, and Sven Fortuin (2021). "Model-Driven Development Platform Selection: Four Industry Case Studies". In: *Software and Systems Modeling (SoSyM)*.
- ▶ Ramautar, Vijanti, Siamak Farshidi, and Sergio España (2021). "Ethical, Social and Environmental Accounting Method Selection". In: (Submitted).
- ▶ Farshidi, Siamak, Slinger Jansen, Sergio España, et al. (2020). "Decision support for blockchain platform selection: Three industry case studies". In: *IEEE Transactions on Engineering Management*.
- ▶ Farshidi, Siamak, Slinger Jansen, and Jan Martijn van der Werf (2020). "Capturing Software Architecture Knowledge for Pattern-Driven Design". In: *Journal of Systems and Software (JSS)*.
- ▶ Farshidi, Siamak, Slinger Jansen, Rolf de Jong, et al. (2018). "A decision support system for software technology selection". In: *Journal of Decision Systems (JDS)*.
- ▶ Farshidi, Siamak and Koorush Ziarati (2016). "A bi-population genetic algorithm with two novel greedy mode selection methods for MRCPSP". in: *Advances in Computer Science: an International Journal* 5.4, pp. 66–77.

Conference Proceedings (peer-reviewed)

- ▶ Hou, Fang, Siamak Farshidi, and Slinger Jansen (2021). "TrustSECO: A Distributed Infrastructure for Providing Trust in the Software Ecosystem". In: *Advanced Information Systems Engineering Workshops*. Springer International Publishing, pp. 121–133.
- ▶ Farshidi, Siamak and Slinger Jansen (2020). "A Decision Support System for Pattern-Driven Software Architecture". In: *Proceedings of the 14th European Conference on Software Architecture, ECSA 2020*, vol. 1. ACM, pp. 1–12.
- ▶ Jansen, Slinger et al. (2020). "SearchSECO: A Worldwide Index of the Open Source Software Ecosystem." In: *Proceedings of the 19th Belgium-Netherlands Software Evolution Workshop*.
- ▶ Farshidi, Siamak et al. (2018a). "A decision support system for cloud service provider selection problems in software producing organizations". In: *2018 IEEE 20th Conference on Business Informatics (CBI)*. vol. 1. IEEE, pp. 139–148.
- ▶ – (2018b). "Multiple Criteria Decision Support in Requirements Negotiation". In: *the 23rd International Conference on Requirements Engineering: Foundation for Software Quality (REFSQ 2018)*. Vol. 2075, pp. 100–107.

Dissertation

- ▶ Farshidi, Siamak (2020). *Multi-Criteria Decision-Making in Software Production*. University Utrecht.

Services

Proceeding/Journal reviews

The Journal of Systems and Software (**JSS**)'21
IEEE Software'18, '19, '20
Information and Software Technology (**IST**)'20 and '21
Research Challenges in Information Science (**RCIS**)'16 and '17
Software Engineering and Advanced Applications (**SEAA**)'16, '17, '18, and '19
Advanced Information Systems Engineering (**CAISE**)'17, '18, '19, '20, and '21
Conference on Software Business (**ICSOB**)'17, '18, '19, '20
IEEE Transactions on Software Engineering (**IEEE TSE**)'20

Program Committees

Dec'16 The 16th Belgium-Netherlands Software EVOLution Workshop (**BENEVOL**'16) Utrecht, the Netherlands

Visibility

Paper presentations

- ▶ "Model-driven development platform selection: four industry case studies" at the 24th International Conference on Model Driven Engineering Languages and Systems (**MODELS'21**) in Fukuoka, Japan virtually
- ▶ "A decision support system for pattern-driven software architecture" at the 14th European Conference on Software Architecture (**ECSA'20**) in L'Aquila, Italy virtually
- ▶ "Capturing software architecture knowledge for pattern-driven design" at **ECSA'20** in L'Aquila, Italy (organized virtually)
- ▶ "A decision support system for software technology selection" at the 20th Conference on Business Informatics (**IEEE CBI'18**) in Vienna, Austria
- ▶ "A decision support system for cloud service provider selection problems in software producing organizations" at the 19th Open Conference of the IFIP WG 8.3 on Decision Support Systems (**IFIP DSS'18**) in Ljubljana, Slovenia

Poster presentation

- ▶ "Multi-Criteria Decision-Making in Software Production" at the 4th dutch national symposium on software engineering (**SEN'19**) in Amsterdam, the Netherlands
- ▶ "A decision support system for software engineers" at the 3rd dutch national symposium on software engineering (**SEN'18**) in Amsterdam, the Netherlands
- ▶ "A decision support system for software production" at **ICT.OPEN'17** in Amersfoort, the Netherlands
- ▶ "A decision model for cloud service provider selection" at **BENEVOL'17** in Antwerp, Belgium
- ▶ "A decision model for database management system selection" at **BENEVOL'16** in Utrecht, the Netherlands

Pitch

- ▶ "Multiple Criteria Decision Support in Requirements Negotiation" at the 24th Conference on Requirements Engineering: Foundation for Software Quality (**REFSQ'18**) in Utrecht, the Netherlands
- ▶ "A decision support system for software engineers" at **ICT.OPEN'17** in Amersfoort, the Netherlands

Demo presentation

- ▶ "Multiple Criteria Decision Support in Requirements Negotiation" at **REFSQ'18** in Utrecht, the Netherlands
- ▶ "A decision support system for software engineers" at **ICT.OPEN'17** in Amersfoort, the Netherlands

Code contribution

Sep'20–present **ENVRI-KMS** University of Amsterdam, the Netherlands

- Context: ENVRI-FAIR project
- Project: A cross-domain knowledge management system for environment communities
- Description: In this project, we are developing a knowledge management system for ENVIRONMENTAL Research Infrastructures, which are crucial pillars for environmental scientists in their quest for understanding and interpreting the complex Earth System. The development and operation of the ENVRI-KMS will be continued and grown during the ENVRI-FAIR project. The ENVRI-KMS development and operation depend on the development effort from the ENVRI subdomains and research infrastructures. The ENVRI-KMS should play a role in supporting developers from RIs to share best practices and find existing solutions.
- ENVRI-KMS: <https://search.envri.eu/>
- GitHub: <https://github.com/QCDIS/solr-php-ui>

May'20–Jun'20 **SecureSECO ledger** Utrecht University, the Netherlands

- Context: SecureSECO project
- Project: The SecureSECO ledger
- Description: The SecureSECO ledger stores all steps in the software development life cycle of a software artifact, from source code to running piece of code. We currently have a live prototype of the ledger running for testing purposes.
- SecureSECO ledger: <https://secureseco.github.io/LedgerPrototypedApp/#/>
- GitHub: <https://github.com/SecureSECO/LedgerPrototypedApp>

Jan'17–Mar'20 **SoProDSS** Utrecht University, the Netherlands

- Context: AMUSE project
- Project: A decision support system for decision-making problems in software production
- Description: We designed, implemented, and evaluated a decision support system, called SoProDSS, that employs decision models based on the MCDM framework that I have introduced in my Ph.D. dissertation to facilitate decision-making and support software engineers with their daily MCDM problems in software production.
- SoProDSS: <https://dss-mcdm.com/>
- GitHub: <https://github.com/SiamakFarshidi/DSS2.0>

Training courses

Jun'20	Start to Teach	Utrecht University, the Netherlands
Nov'19	Explainable and Responsible AI	SIKS, Utrecht, the Netherlands
Jun'19	Selling your science	Utrecht University, the Netherlands
Nov'17	Research methods and methodology for IKS	SIKS, Vught, the Netherlands
Jun'17	International Software Architecture Ph.D. School	SIKS, Leiden, the Netherlands
Feb'17	The End of Theory? On the role of theories in IKS	SIKS, Free University of Amsterdam, the Netherlands
Oct'16	Big Software on the Run: where software meets data	SIKS, Ede, the Netherlands
Jun'16	Data Science	SIKS, Vught, the Netherlands
May'16	Microsoft Cloud for Research Training	University of Amsterdam, the Netherlands

References

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