Pooyan Jamshidi

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Research Interests

I am the director of **AISys lab** and an Assistant Professor in the Computer Science and Engineering department at the University of South Carolina.. My goal is to advance a scientific and principled understanding of learning-enabled autonomous systems (e.g., Space Rovers/Landers). My research is driven by a theoretical understanding of machine learning systems and the mathematics behind the statistical learning theory. I am, in particular, interested in transfer learning, with the goal of developing robust algorithms that enable autonomous systems to learn causal invariances.

Research Positions

8/2018–* **Assistant Professor**, *University of South Carolina*, Columbia, SC, US.
Assistant professor of Computer Science and Engineering and the director of AISys Lab.

12/2016–8/2018 **Postdoctoral Associate**, *Carnegie Mellon University*, Pittsburgh, US.
Worked with Christian Kästner on performance analysis of highly-configurable software, collaborated very closely with Norbert Siegmund. Worked with David Garlan on meta-learning for self-adaptive systems. Involved in BRASS, a DARPA sponsored project developing model-based adaptation of mobile robotics software.

2/2015–12/2016 **Postdoctoral Associate**, *Imperial College London*, London, UK.
Involved in two EU projects (DICE and MODAClouds), where I developed practical tools and techniques for auto-tuning big data systems (Apache Hadoop and Storm).

9/2014–2/2015 **Postdoctoral Researcher**, *Dublin City University*, Dublin, Ireland.
Worked with Claus Pahl on developing self-learning controllers at IC4 cloud center and in collaboration with Intel (Giovani Estrada) and Microsoft (Niall Moran).

9/2010–9/2014 **Research Assistant**, *Dublin City University*, Dublin, Ireland.
Worked with Claus Pahl on developing a cloud controller for auto-scaling in cloud. I received a scholarship from Lero (the Irish Software Research Centre).

7/2008–9/2010 **Research Group Coordinator**, *Shahid Beheshti University*, Tehran, Iran.
Coordinated the Automated Software Engineering Research (ASER) group (10 researchers); my main research was to develop tools for designing service-oriented systems.

Qualifications

9/2010–9/2014 **Ph.D., Computing**, *Dublin City University*, Ireland.
- Thesis: *A framework for robust control of uncertainty in self-adaptive software*
- Adviser: Prof. Claus Pahl, External examiner: Prof. Pete Sawyer (Lancaster)

9/2003–2/2006 **M.Sc., Systems Engineering**, *Amirkabir University of Technology*, Iran.
- Thesis: *An integrated knowledge-based system for product design support*
- Adviser: Dr. Saeed Mansour

9/1999–9/2003 **B.A., Computer Science**, *Amirkabir University of Technology*, Iran.

Industrial Experience

2007–2010 **Project Manager**, *System Group*, Tehran, Iran.

Managed a large-scale software project on developing an integrated software system automating business processes in a charity organization at a national scale. My team size was 20-30 people including business analysts, designers and software developers. Technologies: .NET, Microsoft SQL Server, SOA compatible stacks.

2006–2007 **Enterprise Architect**, *System Group*, Tehran, Iran.

Developed the enterprise architecture and prepared the ICT business planning using IBM's Business Systems Planning (BSP) and the Zachman Framework. Designed the software architecture of the core systems using an exteded ADL in Visual Paradim.

2003–2006 **Software Engineer**, *Rayan Pardaz Kavosh*, Tehran, Iran.

Developed server-side software, designed finance and automation software systems. Added a number of new features to a code base of a manufacturing automation system. Technologies: Visual C++, COM/CORBA, Socket programming

Funding

NSF **"SmartSight: an AI-Based Computing Platform to Assist Blind and Visually Impaired People"** , *Agency: NSF*, Award Amount: **$499,650**, Project Period: 10/01/2020 - 10/01/2023.
Role: PI. Collaboration: Mohsen Amini Salehi.

NASA **"RASPBERRY SI: Resource Adaptive Software Purpose-Built for Extraordinary Robotic Research Yields - Science Instruments"** , *Agency: NASA*, Award Amount: **$300,000**, Project Period: 10/01/2020 - 10/01/2022.
Role: PI. Collaboration: David Garlan (CMU, co-I), Bradley Schmerl (CMU, co-I), Javier Camara (York, collaborator), Ellen Czaplinski, Katherine Dzurilla (University of Arkansas, consultant), Matt DeMinico (NASA Glenn Research Center, consultant), Mike Dalal (NASA Ames, testbed), Hari Nayar (NASA JPL, testbed).

NASA **"A Generic Data-Driven Framework via Physics-Informed Deep Learning"**, *Agency: NASA*, Award Amount: **$100,000**, Project Period: 08/01/2020 - 08/01/2021.
Role: co-PI.

Google Cloud **"GCP research credits for Adversarial ML"**, *Agency: Google*, Award Amount: **$10,000**, Project Period: 01/01/2020 - 06/01/2020.
Role: PI.

Magellan Scholar Award **"Multi-stage Compression of Deep Neural Networks through Pruning and Knowledge Distillation"**, *Agency: UofSC Office of Undergraduate Research*, Award Amount: **$2,750**, Project Period: 01/01/2020 - 12/31/2020.
Role: PI.

Magellan Scholar Award **"Ensemble of Many Weak Defenses: Defending Deep Neural Networks Against Adversarial Attacks"**, *Agency: UofSC Office of Undergraduate Research*, Award Amount: **$2,750**, Project Period: 01/01/2020 - 12/31/2020.
Role: PI.

SURF **"Adversarial Machine Learning"**, *Agency: USC Honors College SURF Grant*, Award Amount: **$2,000**, Project Period: 10/15/2019 - 06/30/2020.
Role: PI.

Google Cloud **"GCP research credits for Adversarial ML"**, *Agency: Google*, Award Amount: **$8,000**, Project Period: 09/01/2019 - 03/01/2020.
Role: PI.

NASA **"Robust Software Testing of Autonomous Aerospace Robotic Systems Using Transfer Learning"**, *Agency: NASA*, Award Amount: **$50,000** (25,000 cost share), Project Period: 05/07/2019 - 05/06/2020.
Role: PI; Co-PIs: Gregory Gay, Jason O'Kane.

ASPIRE-I **"Optimizing Energy Consumption of Deep Neural Networks for Intelligent Learning Systems"**, *Agency: University of South Carolina ASPIRE-I*, Award Amount: **$15,000**, Project Period: 07/01/2019 - 09/30/2020.
Role: PI

DARPA-DOD-AFOSR **"Online Transfer Learning and Self-Adaptation of Robots"**, *Agency: Air Force Office of Science Research (AFOSR) and Defense Advanced Research Projects Agency (DARPA)*, Award Amount: **$114,741** (subaward only), Project Period: 09/01/2018 - 08/31/2019.
Role: PI of the subaward; Prime (CMU); PI: Jonathan Aldrich.

McNAIR **"Bayesian Structure Learning"**, *Agency: University of South Carolina McNAIR Junior Fellows*, Award Amount: **$3,000**, Project Period: 05/15/2019 - 08/16/2019.
Role: PI.

SURF **"Neurofeedback-based Reinforcement Learning"**, *Agency: USC Honors College SURF Grant*, Award Amount: **$2,600**, Project Period: 10/15/2018 - 06/30/2019.
Role: PI.

Honors and Awards

Distinguished Reviewer	Invited to join the ACM TOSEM Board of Distinguished Reviewers, August 2020.
Competition	Selected as one of the two finalists at DCU for a fully funded research visit to **IBM Research** Brazil for research on automatic synthesis of connectors, 2014.
Competition	Thesis in 3 national finalist, "I bet you didn't know that software can adapt itself on-the-fly", Ireland, 2013, `https://goo.gl/igfKYC`
PhD Fellowship	Awarded Lero Graduate School in Software Engineering (LGSSE) scholarship on the structured PhD in Software Engineering, 2010-2013, **$85,000**.
Iranian University Entrance Exam	Ranked **21nd** in the national graduate-level exam among 20,000 participants, 2003.

Media Coverage and Press Release

Media Coverage	UofSC College of Engineering and Computing coverage of our lab, June 2019, `https://www.sc.edu/study/colleges_schools/engineering_and_computing/about/news/2019/jamshidiai.php`

Invited Talks, Lectures and Seminars

Slideshare	The slides of my recent talks are available at: `http://www.slideshare.net/pooyanjamshidi/`
Augusta University	**Ensembles of Many Diverse Weak Defenses can be Strong: Defending Deep Neural Networks Against Adversarial Attacks**, *Augusta, Georgia*, February 2020.
Furman University	**Transfer Learning for Performance Analysis of Machine Learning Systems**, *Greenville, SC*, April 2019.
SC EPSCoR Conference	**Transfer Learning for Performance Analysis of Machine Learning Systems**, *Greenville, SC*, April 2019.
re-work DevOps Summit	**Machine Learning meets DevOps: Transfer Learning for Performance Optimization**, *Houston, Texas*, November 2018.
SATURN	**Architectural Tradeoffs in Learning-Based Software**, *Plano, Texas*, May 2018.
NC State University	**Learning Software Performance Models for Dynamic and Uncertain Environments**, *Raleigh, US*, 2017.
SPEC DevOps RG	**An Exploratory Analysis of Transfer Learning for Performance Modeling of Configurable Systems**, *Online talk, RG DevOps Performance Working Group*, 2017.
Dagstuhl Seminar	**Machine Learning meets DevOps**, *Software Performance Engineering in the DevOps World, Dagstuhl, Germany*, 2016.
Bern University	**An Uncertainty-Aware Approach to Optimal Configuration of Stream Processing Systems**, *Bern, Switzerland*, 2016.
SPEC DevOps RG	**An Uncertainty-Aware Approach to Optimal Configuration of Stream Processing Systems**, *Online talk, RG DevOps Performance Working Group*, 2016.
SPEC DevOps RG	**Microservices Architecture Enables DevOps: Migration to a Cloud-Native Architecture**, *Online talk, RG DevOps Performance Working Group*, 2016.
NC4 Conference	**DevOps: Migration to a Cloud-Native Architecture**, *The National Conference on Cloud Computing & Commerce, Dublin, Ireland*, 2016.
Sharif University	**Fuzzy Self-Learning Controllers for Elasticity Management in Dynamic Cloud Architectures**, *Tehran, Iran*, 2016.
NII Shonan Meeting	**Fuzzy Self-Learning Controllers for Elasticity Management in Dynamic Cloud Architectures**, *National Institute of Informatics (NII), Controlled Adaptation of Self-adaptive Systems (CASaS), Shonan, Japan*, 2016.
Trinity College	**Self-learning Cloud Controllers**, *Trinity College Dublin*, 2015.
UFC University	**Self-learning Cloud Controllers**, *Federal University of Ceará, Fortaleza, Brazil*, 2015.
UECE University	**Cloud Migration Patterns: A Multi-Cloud Architectural Perspective**, *Ceará State University, Fortaleza, Brazil*, 2015.
NC4 Conference	**Fuzzy Q-Learning for Knowledge Evolution**, *The National Conference on Cloud Computing & Commerce, Dublin, Ireland*, 2015.

SPEC DevOps RG **Self-learning Cloud Controllers**, *Online talk, RG DevOps Performance Working Group*, 2015.

Dagstuhl Seminar **Fuzzy Control Meets Software Engineering**, *Control Theory meets Software Engineering, Dagstuhl, Germany*, 2014.

Teaching Activities

Teaching (Current)

Fall 2018-* **CSCE 585: Machine Learning Systems**, *University of South Carolina, Columbia, SC*, Lecturer, `https://pooyanjamshidi.github.io/mls/`.

Spring 2019-* **CSCE 580: Artificial Intelligence**, *University of South Carolina, Columbia, SC*, Lecturer, `https://pooyanjamshidi.github.io/csce580/`.

Graduate Teaching

4/2018 **S17-655 Architectures for Software Systems (CMU Software Engineering Masters Program)**, *Carnegie Mellon University, Pittsburgh, US*, A guest lecture on Machine Learning for the Software Architect.

11/2016 **SMA: Software Modeling and Analysis (Oscar Nierstrasz's course)**, *Bern University, Switzerland*, A guest lecture on Architecture Extraction.

10/2015–1/2016 **424H - Learning in Autonomous Systems**, *Imperial College London*, TA.

11/2014–12/2014 **CA674 - Cloud Architecture**, *Dublin City University*, Lectures shared with Claus Pahl.

3/2014–6/2014 **CA668 E-commerce Infrastructure**, *Dublin City University*, Lectures shared with Claus Pahl.

Undergraduate Teaching

10/2017 **Foundations of Software Engineering (Chrsitan Kästner and Claire Le Goues)**, *Carnegie Mellon University*, Guest lecture on *Microservices*.

9/2008-6/2010 **Software Engineering**, *Tarbiat Moallem University*, Lecturer.

9/2001-6/2003 **Introduction to C/C++**, *Amirkabir University of Technology*, TA.

9/2002-6/2003 **Data Structures**, *Amirkabir University of Technology*, TA.

Postdocs (current)

2019- **Mohammad Ali Javidian**.

Doctoral students (current)

2018- **Shahriar Iqbal**.

2019- **Jianhai Su**.

2019- **Ying Meng**.

2019- **Peter Mourfield**.

Undergraduate students (current)

8/2018-6/2019 **Nathan Stofik**.

12/2018-8/2019 **Tristan Klintworth**.

8/2019- **Blake Edwards**.

8/2019- **Stephen Baione**.

Undergraduate students (completed)

5/2018-8/2019 **Joshua Ravishankar**, *Summer REU*.

5/2018-8/2019 **Rabina Phuyel**, *Summer REU*.

Research Co-Mentoring (completed)

2017-2018 **Federal University of Minas Gerais (UFMG)**, *M.Sc. thesis*, Markos Viggiato de Almeida.
On the Investigation of Software Development and Evolution Practices

2018 **Carnegie Mellon University**, *Undergraduate research project*, Students: Alex Gao, Connor Lin, Jason Bak, Sander Lanbo Shi, Yunjie Su.
Design space explorations of deep neural network architectures for embedded devices.

2017 **Carnegie Mellon University**, *REU Program*, Changming Xu.
Can you fool a self-adaptive software system?

2016–17 **Imperial College London**, *B.Eng. project*, Ka Yan Wong.
Experimental study of performance variations in big data systems.

2016 **Imperial College London**, *M.Eng. project*, Yifan Zhai.
A DevOps canary testbed for Big Data application testing.

2015 **Imperial College London**, *B.Eng. final project*, Zhang Haoran, Qiu Jiaxin, Abdeljallal Fahd, Lu Cong, Chadjiminas Ioannis, Liu Yao.
A suite for automated configuration testing and benchmarking for Apache Spark.

2016 **Imperial College London**, *M.Eng. final project*, Xidi Chen.
A suite for automated configuration testing and benchmarking for Apache Hadoop.

2014–2015 **Dublin City University**, *M.Sc. practicum*, Robert Mason.
Auto-scaling in OpenStack cloud.

2014 **Dublin City University**, *MS.c. practicum*, Brian C. Carroll.
Auto-scaling in the cloud: evaluating a control based technique.

2014–15 **Sharif University of Technology**, *M.Sc. thesis*, Armin Balalaie.
Migrating to cloud-native architectures using microservices.

2008–10 **Shahid Beheshti University**, *M.Sc. thesis*, Ali Rostampour, Ali Kazemi.
A metric for measuring the degree of entity-centric service cohesion.

Other Research Supervision

2019 **University of South Carolina**, *PhD (Computer Science and Engineering)*, Mohammad Ali Javidian, Ph.D. committee member.

2019 **University of South Carolina**, *PhD (Computer Science and Engineering)*, Hussein Almulla, Ph.D. committee member.

2019 **University of South Carolina**, *PhD (Computer Science and Engineering)*, Shervin Ghasemlou, Ph.D. committee member.

2018 **University of South Carolina**, *PhD (Electrical Engineering)*, Hayder Dawood Abbood, Ph.D. committee member.

2018 **University of South Carolina**, *PhD (Computer Science and Engineering)*, Jason Moulton, Ph.D. committee member.

Publications

Key publications are highlighted with ★ based on their importance to my research goal, http://scholar.google.com/citations?user=41rV5koAAAAJ

Refereed Journal Papers

★IEEE JAIR [J19] M. Javidian, M. Valtorta, P. Jamshidi, *AMP Chain Graphs: Minimal Separators and Structure Learning Algorithms*, Journal of Artificial Intelligence Research (JAIR), 2020. [SJR rating: **Q1**]

IEEE TSE [J18] R. Krishna, V. Nair, P. Jamshidi, T. Menzies, *Whence to Learn? Transferring Knowledge in Configurable Systems using BEETLE*, IEEE Transactions on Software Engineering (TSE), 2020. [SJR rating: **Q1**]

Springer JBD [J17] M. Bersani, F. Marconi, D. Tamburri, A. Nodari, P. Jamshidi, *Verifying big data topologies by-design: a semi-automated approach*, Journal of Big Data, 2019. doi:10.1186/s40537-019-0199-y [SJR rating: **Q1**]

Wiley SPE [J16] A. Balalaie, A. Heydarnoori, P. Jamshidi, D.A. Tamburri, T. Lynn, *Microservices migration patterns*, Wiley Software: Practice and Experience (SPE), 2018. doi:10.1002/spe.2608 [SJR rating: **Q2**]

Elsevier JSS [J15] A. Aleti, C. Trubiani, A. van Hoorn, P. Jamshidi, *An Efficient Method for Uncertainty Propagation in Robust Software Performance Estimation*, Elsevier Journal of Systems and Software (JSS), 2017. doi:10.1016/j.jss.2018.01.010 [SJR rating: **Q1**]

ACM TOIT [J14] C. Pahl, P. Jamshidi, O. Zimmermann, *Architectural Principles for Cloud Software*, ACM Transactions on Internet Technology (TOIT), 18(2), 2018. doi:10.1145/3104028 [SJR rating: **Q1**]

IEEE TCC [J13] C. Pahl, A. Brogi, J. Soldani, P. Jamshidi, *Cloud Container Technologies: a State-of-the-Art Review*, IEEE Transactions on Cloud Computing (TCC). doi:10.1109/TCC.2017.2702586. [SJR rating: **Q1**]

Wiley JSEP [J12] C Pahl, P. Jamshidi, D Weyns, *Cloud architecture continuity: Change models and change rules for sustainable cloud software architectures*, Wiley Journal of Software: Evolution and Process (JSEP), 29(2), 2017 doi:10.1002/smr.1849. [SJR rating: **Q2**]

ACM TAAS [J11] **Invited** A. Filieri, M. Maggio, K. Angelopoulos, N. D'Ippolito, I. Gerostathopoulos, A. Hempel, H. Hoffmann, P. Jamshidi, E. Kalyvianaki, C. Klein, F. Krikava, S. Misailovic, A. V. Papadopoulos, S. Ray, A. M. Sharifloo, S. Shevtsov, M. Ujma and T. Vogel, *Control Strategies for Self-Adaptive Software Systems*, ACM Transactions on Autonomous and Adaptive Systems (TAAS), invited paper, 11(4), 2017, doi:10.1145/3024188. [SJR rating: **Q1**]

IEEE TCC [J10] F. Fowley, C. Pahl, P. Jamshidi, D. Fang, X. Liu, *A Classification and Comparison Framework for Cloud Service Brokerage Architectures*, IEEE Transactions on Cloud Computing (TCC), 2016, doi:10.1109/TCC.2016.2537333. [SJR rating: **Q1**]

Wiley SPE [J9] P. Jamshidi, C. Pahl, N. C. Mendonça, *Pattern-based Multi-Cloud Architecture Migration*, Wiley Software: Practice and Experience (SPE), 47(9), 1159-1184, 2016. doi:10.1002/spe.2442 [SJR rating: **Q2**]

★ Elsevier FGCS [J8] S. Farokhi, P. Jamshidi, E. B. Lakew, I. Brandic, E. Elmroth, *A Hybrid Cloud Controller for Vertical Memory Elasticity: A Control-theoretic Approach*, Elsevier Future Generation Computer Systems (FGCS), 65, 57 – 72 (2016). doi:10.1016/j.future.2016.05.028, [SJR rating: **Q1**]

Elsevier FGCS [J7] D. Fang, X. Liu, I. Romdhani, P. Jamshidi, C. Pahl, *An Agility-Oriented and Fuzziness-Embedded Semantic Model for Collaborative Cloud Service Search, Retrieval and Recommendation*, Elsevier Future Generation Computer Systems (FGCS), 56, 11 – 26 (2016). doi:10.1016/j.future.2015.09.025, [SJR rating: **Q1**]

IEEE TCC [J6] **Featured Article** P. Jamshidi, A. Ahmad, C. Pahl, *Cloud Migration Research: A Systematic Review*, IEEE Transactions on Cloud Computing (TCC), 1(2), 142 – 157 (2013). doi:10.1109/TCC.2013.10, [SJR rating: **Q1**]

Springer JSEP [J5] A. Ahmad, P. Jamshidi, C. Pahl, *Classification and Comparison of Architecture Evolution Reuse Knowledge - A Systematic Review*, Springer Journal of Software: Evolution and Process (JSEP), 26(7): 654–691 (2014). doi:10.1002/smr.1643, [SJR rating: **Q2**]

EASST [J4] A. Ahmad, P. Jamshidi, C. Pahl, F. Khaliq, *A Pattern Language for the Evolution of Component-based Software Architectures*, Electronic Communications of the EASST, 59, 1 – 32 (2014). doi:10.14279/tuj.eceasst.59.931

IEEE Systems [J3] A. Khoshkbarforoushha, P. Jamshidi, M. Fahmideh, L. Wang, R. Ranjan, *Metrics for BPEL Process Reusability Analysis in a Workflow System*, IEEE Systems Journal, 1 – 10 (2014). doi:10.1109/JSYST.2014.2317310, [SJR rating: **Q1**]

Springer SoSym [J2] M. Fahmideh, M. Sharifi, P. Jamshidi, *Enhancing the OPEN Process Framework with Service-Oriented Method Fragments*, Springer Software and Systems Modeling (SoSym), 13(1): 361 – 390 (2014). doi:10.1007/s10270-011-0222-z, [SJR rating: **Q1**]

Springer SOCA [J1] A. Khoshkbarforoushha, P. Jamshidi, A. Nikravesh, F. Shams, *Metrics for BPEL process context-independency analysis*, Springer Service Oriented Computing and Applications (SOCA), 5(3): 139 – 157 (2011). doi:10.1007/s11761-011-0077-8, [SJR rating: **Q2**]

Refereed Conference Papers

★UAI [C31] M. Javidian, M. Valtorta, P. Jamshidi, *Learning LWF Chain Graphs: A Markov Blanket Discovery Approach*, In Proc. of The Conference on Uncertainty in Artificial Intelligence (UAI), Toronto, Canada (August 2020) [Acceptance rate: 27%(142/515)].

SUM [C30] M. Javidian, M. Valtorta, P. Jamshidi, *Order-Independent Structure Learning of Multivariate Regression Chain Graphs*, In Proc. of International Conference on Scalable Uncertainty Management (SUM), Compiegne, France (December 2019).

PROFES [C29] A. Banijamali, P. Jamshidi, P. Kuvaja, and M. Oivo, *Kuksa: A Cloud-Native Architecture for Enabling Continuous Delivery in the Automotive Domain*, In Proc. of International Conference on Product-Focused Software Process Improvement (PROFES), Barcelona, Spain (November 2019).

ICGSE [C28] M. Viggiato, J. Oliveira, E. Figueiredo, P. Jamshidi, and C. Kaestner, *Understanding similarities and differences in software development practices across domains*, In Proc. of International Conference on Global Software Engineering (ICGSE), Montreal, Canada, (May 2019).

ICPE [C27] C. Bezemer, S. Eismann, V. Ferme, J. Grohmann, R. Heinrich, P. Jamshidi, W. Shang, A. van Hoorn, M. Villavicencio, J. Walter, and F. Willnecker, *How is Performance Addressed in DevOps?*, In Proc. of International Conference on Performance Engineering (ICPE), Mumbai, India, (April 2019).

OpML [C26] M. S. Iqbal, L. Kotthoff, P. Jamshidi, *Transfer Learning for Performance Modeling of Deep Neural Network Systems*, In Proc. of the USENIX Conference on Operational Machine Learning (OpML), Santa Clara, CA, (May 2019).

★SEAMS [C25] P. Jamshidi, J. Camára, B. Schmerl, C. Kästner, D. Garlan, *Machine Learning Meets Quantitative Planning: Enabling Self-Adaptation in Autonomous Robots*, In Proc. of the 12th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), Montreal, Canada, (May 2019) [Acceptance rate: 28%(10/36)].

AAAI [C24] M. A. Javidian, P. Jamshidi, M. Valtorta, *Transfer Learning for Performance Modeling of Configurable Systems: A Causal Analysis*, In Proc. of AAAI Spring Symposium Beyond Curve Fitting: Causation, Counterfactuals, and Imagination-based AI, Stanford, CA, USA, (March 2019).

AAMAS [C23] M. A. Javidian, P. Jamshidi, R. Ramezanian, *Avoiding Social Disappointment in Elections*, In Proc. of International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Montreal, Canada, (May 2019).

FSE [C22] P. Jamshidi, M. Velez, C. Kästner, N. Siegmund, *Learning to Sample: Exploiting Similarities Across Environments to Learn Performance Models for Configurable Systems*, In Proc. of the ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE), Florida, USA, (Nov 2018) [Acceptance rate: 19%(55/295); CORE rating: rank **A***].

TechDebt [C21] A. Mori, G. Vale, M. Viggiato, J. Oliveira, E. Figueiredo, E. Cirilo, P. Jamshidi, and C. Kästner, *Evaluating Domain-Specific Metric Thresholds: An Empirical Study*, In Proc. of the International Conference on Technical Debt (TechDebt), Gothenburg, Sweden, (May 27-28, 2018).

★ASE [C20] P. Jamshidi, N. Siegmund, M. Velez, C. Kästner, A. Patel, Y. Agarwal, *Transfer Learning for Performance Modeling of Configurable Systems: An Exploratory Analysis*, In Proc. of the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE), Illinois, USA, (Nov 2017) [Acceptance rate: 21%(67/322); CORE rating: rank **A***].

★SEAMS [C19] P. Jamshidi, M. Velez, C. Kästner, N. Siegmund, P. Kawthekar, *Transfer Learning for Improving Model Predictions in Highly Configurable Software*, In Proc. of the 12th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), Buenos Aires, Argentina, (May 2017) [Acceptance rate: 23% (14/61), Invited for an extension to ACM TAAS].

CCGrid [C18] H. Arabnejad, C. Pahl, P. Jamshidi, G. Estrada, *A Comparison of Reinforcement Learning Techniques for Fuzzy Cloud Auto-Scaling*, in Proc. of The 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Madrid, Spain, (May 2017) [Acceptance rate: 23% (64/280); CORE rating: rank **A**]. Nominated for best paper award.

WICSA [C17] M. Bersani, F. Marconi, D. Tamburri, P. Jamshidi, A. Nodari, *Continuous Architecting of Stream-Based Systems*, In Proc. of The 13th Working IEEE/IFIP Conference on Software Architecture (WICSA), Venice, Italy, (April 2016). [Acceptance rate: 37% (56/149); CORE rating: rank **A**]

★MASCOTS [C16] P. Jamshidi, G. Casale, *An Uncertainty-Aware Approach to Optimal Configuration of Stream Processing Systems*, In Proc. of IEEE 24th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS), London, UK (September 2016). [Acceptance rate: 17% (34/200); CORE rating: rank **A**]

★QoSA [C15] P. Jamshidi, A. Sharifloo, C. Pahl, H. Arabnejad, A. Metzger, G. Estrada, *Fuzzy Self-Learning Controllers for Elasticity Management in Dynamic Cloud Architectures*, In Proc. of 12th International ACM SIGSOFT Conference on the Quality of Software Architectures (QoSA), Venice, Italy, (April 2016). [CORE rating: rank **A**]

ICCAC [C14] P. Jamshidi, A. Sharifloo, C. Pahl, A. Metzger, G. Estrada, *Self-Learning Cloud Controllers: Fuzzy Q-Learning for Knowledge Evolution*, In Proc. of IEEE International Conference on Cloud and Autonomic Computing (ICCAC), Boston, MA, USA, (Sept. 2015). [CORE rating: rank B]

ICAC [C13] Soodeh Farokhi, P. Jamshidi, D. Lucanin, I. Brandic, *Performance-Based Vertical Memory Elasticity*, In Proc. of IEEE International Conference on Autonomic Computing (ICAC), Grenoble, France, (Jul. 2015). [CORE rating: rank B]

ECSA [C12] C. Pahl, P. Jamshidi, *Software Architecture for the Cloud - A Roadmap Towards Control-Theoretic, Model-Based Cloud Architecture*, In Proc. of Springer European Conference on Software Architecture (ECSA), (Sept. 2015). [CORE rating: rank **A**]

SEAMS [C11] **Invited** A. Filieri, M. Maggio, K. Angelopoulos, N. D'Ippolito, I. Gerostathopoulos, A. Hempel, H. Hoffmann, P. Jamshidi, E. Kalyvianaki, C. Klein, F. Krikava, S. Misailovic, A. V. Papadopoulos, S. Ray, A. M. Sharifloo, S. Shevtsov, M. Ujma and T. Vogel, *Software Engineering Meets Control Theory*, In Proc. of the 10th ACM International Symposium on Software Engineering for Adaptive and Self-Managing Systems, Firenze, Italy, (May 2015), [Acceptance rate: 29% (16/55)].

UCC [C10] L. Zhang, Y. Zhang, P. Jamshidi, L. Xu, C. Pahl, *Workload Patterns for Quality-Driven Dynamic Cloud Service Configuration and Auto-Scaling*, In Proc. of IEEE/ACM 7th International Conference on Utility and Cloud Computing (UCC), London, UK, (Dec 2014), [Acceptance rate: 19% (38/198); CORE rating: rank **A**]

SEAMS [C9] P. Jamshidi, A. Ahmad, C. Pahl, *Autonomic Resource Provisioning for Cloud-Based Software*, In Proc. of the 9th ACM International Symposium on Software Engineering for Adaptive and Self-Managing Systems, Hyderabad, India, (Jun. 2014), [Acceptance rate= 18% (15/80)].

CSMR [C8] P. Jamshidi, M. Ghafari, A. Ahmad, C. Pahl, *A Framework for Classifying and Comparing Architecture-Centric Software Evolution Research*, In Proc. of 17th European Conference on Software Maintenance and Reengineering (CSMR), Genova, Italy, (Mar. 2013), [Acceptance rate: 36% (29/80); CORE rating: rank B]

CBSE [C7] M. Ghafari, P. Jamshidi, S. Shahbazi, H. Haghighi, *An architectural approach to ensure globally consistent dynamic reconfiguration of component-based systems*, In Proc. of the 15th ACM SIGSOFT symposium on Component Based Software Engineering (CBSE), Bertinoro, Ital, (Sept. 2012). [Acceptance rate: 29%; CORE rating: rank **A**]

CAiSE [C6] A. Ahmad, P. Jamshidi, C. Pahl, *Graph-Based Pattern Identification from Architecture Change Logs*, In Proc. of Springer International Conference on Advanced Information Systems Engineering (CAiSE), (Jun. 2012). [Short paper, CORE rating: rank **A**]

QSIC [C5] A. Kazemi, A. Rostampour, A. Zamiri, P. Jamshidi, H. Haghighi, F. Shams, *An Information Retrieval Based Approach for Measuring Service Conceptual Cohesion*, In Proc. of 11th IEEE International Conference on Quality Software (QSIC), Madrid, Spain, (Jul. 2011). [Acceptance rate: 17.6%; CORE rating: rank B]

SCC [C4] A. Kazemi, A. Nasirzadeh, A. Rostampour, H. Haghighi, P. Jamshidi, F. Shams, *Measuring the Conceptual Coupling of Services Using Latent Semantic Indexing*, In Proc. of IEEE International Conference on Services Computing (SCC), Washington, DC, USA, (Jul. 2011). [Acceptance rate: 17%; CORE rating: rank **A**]

SERVICES [C3] A. Kazemi, A. Rostampour, P. Jamshidi, E. Nazemi, F. Shams, A. Nasirzadeh, *A Genetic Algorithm Based Approach to Service Identification*, In Proc. of IEEE World Congress on Services (SERVICES), Washington, DC, USA, (Jul. 2011). [Acceptance rate: 17%; CORE rating: rank A]

SERVICES [C2] A. Khoshkbarforoushha, R. Tabein, P. Jamshidi, F. Shams, *Towards a metrics suite for measuring composite service granularity level appropriateness*, In Proc. of IEEE World Congress on Services (SERVICES), Miami, FL, USA, (Jul. 2010). [Acceptance rate: 18% (29/165); CORE rating: rank B]

SCC [C1] P. Jamshidi, M. Sharifi, S. Mansour, *To Establish Enterprise Service Model from Enterprise Business Model*, in Proc. of IEEE International Conference on Services Computing (SCC), Honolulu, HI, USA, (Jul. 2008). [Acceptance rate: 18%; CORE rating: rank **A**]

Refereed Magazine Papers

★Software [M5] N. C Mendonça, P. Jamshidi, D. Garlan, and C. Pahl, *Developing Self-Adaptive Microservice Systems: Challenges and Directions*, IEEE Software, 2019. [SJR rating: **Q1**]

Software [M5] J. Aldrich, J. Biswas, J. Camára, D. Garlan, A. Guha, J. Holtz, P. Jamshidi, C. Kaestner, C. Le Goues, A. Mohseni-Kabir, I. Ruchkin, S. Samuel, B. Schmerl, C. Steven Timperley, M. Veloso, and I. Voysey, *Model-based Adaptation for Robotics Software*, IEEE Software, 2019. [SJR rating: **Q1**]

Software [M4] C. Trubiani, P. Jamshidi, J. Cito, W. Shang, Z.M. Jiang, M. Borg, *Performance issues? Hey DevOps, mind the uncertainty!*, IEEE Software, 2018. [SJR rating: **Q1**]

Software [M3] **Featured Article** P. Jamshidi, C. Pahl, N. Mendonça, J. Lewis, S. Tilkov, *Microservices: The Journey So Far and Challenges Ahead*, IEEE Software, 2018. doi:10.1109/MS.2018.2141039, [SJR rating: **Q1**]

Cloud [M2] P. Jamshidi, C. Pahl, N. Mendonça, *Managing Uncertainty in Autonomic Cloud Elasticity Controllers*, IEEE Cloud Computing, 2016. doi:10.1109/MCC.2016.66

Software [M1] **Featured Article** A. Balalaie, A. Heydarnoori, P. Jamshidi, *Microservices Enables DevOps: an Experience Report on Migration to a Cloud-Native Architecture*, IEEE Software, 2016. doi:10.1109/MS.2016.64, [SJR rating: **Q1**]

Technical Reports

Dagstuhl [TR2] A. van Hoorn, P. Jamshidi, P. Leitner, I. Weber, *Software Performance Engineering in the DevOps World*, Report from GI-Dagstuhl Seminar 16394, (Sept. 2017), `https://arxiv.org/abs/1709.08951`.

SPEC [TR1] A. Brunnert, A. van Hoorn, F. Willnecker, A. Danciu, Wi. Hasselbring, C. Heger, N. Herbst, P. Jamshidi, R. Jung, J. von Kistowski, A. Koziolek, J. Kroß, S. Spinner, C. Vögele, J. Walter, A. Wert, *Performance-oriented DevOps: A Research Agenda*, SPEC Research Group — DevOps Performance Working Group, Standard Performance Evaluation Corporation (SPEC), (Aug. 2015), SPEC-RG-2015-01.

Software Artifacts

Github Almost all listed software is developed collaboratively. LD: lead developer; CC: contributor.

CC [S17] **Athena**, *is a Framework for defending machine learning systems against adversarial attacks*, Python, https://github.com/softsys4ai/athena.

LD [S16] **robot_control**, *robot_control is a set of controllers and actuators that run, control, interface the ROS enabled robots, as a part of DARPA BRASS project.*, C++, https://github.com/pooyanjamshidi/robot_control.

LD [S15] **brass_gazebo_battery**, *brass_gazebo_battery is a Gazebo plugin that simulates an open-circuit battery model. This is a fairly extensible and reusable battery plugin for any kind of Gazebo compatible robots.*, C++, https://github.com/pooyanjamshidi/brass_gazebo_battery.

LD [S14] **GenPerf**, *GenPerf uses symbolic regression to synthetically generate target performance influence models with different similarities to the source model. GenPerf is used to generate synthetic data for evaluating our TL approach.*, Python, https://github.com/pooyanjamshidi/GenPerf.

LD [S13] **AutoTL (NOT RELEASED)**, *This tool enables an adaptive sampling that learns from multiple exclusive information origins including influential configuration options, their interactions, and performance distribution of the configurable software*, Python, https://github.com/pooyanjamshidi/autotl.

LD [S12] **model-learner**, *This tool enables discovering a black box model using regression models and transfer learning. This was used in the BRASS project to enable battery charge/recharge in a self-adaptive loop*, Python, https://github.com/cmu-mars/model-learner.

LD [S11] **autoscaling-bigdata**, *A library for application level runtime monitoring and runtime change actuators and auto-scaling controllers for Big Data technologies such as Apache Storm, Spark, Hadoop*, Matlab+REST APIs, https://github.com/pooyanjamshidi/autoscaling-bigdata.

LD [S10] **TL4CO**, *A Machine Learning tool for finding the optimum configuration of Big Data systems by transferring the learning from other system versions in DevOps context*, Matlab+Java, https://github.com/dice-project/DICE-Configuration-TL4CO.

LD [S9] **Featured Software** **BO4CO**, *A Machine Learning tool for finding the optimum configuration of Big Data systems*, Matlab+Python, https://github.com/dice-project/DICE-Configuration-BO4CO.

LD [S8] **ElasticBench**, *A cloud application framework to plug-in auto-scaling logic and experimentally evaluate controllers in a feedback control loop on platform as a service environment on Microsoft Azure*, .NET, https://github.com/pooyanjamshidi/ElasticBench.

CC [S7] **spark-suite**, *A suite for automated configuration testing, automated topology deployment and a benchmarking tool for Apache Spark*, Java, https://github.com/pooyanjamshidi/spark-suite.

CC [S6] **OSTIA**, *A parser to elicit and represent Storm topologies by reverse engineering Storm-based programs*, Ruby, https://github.com/maelstromdat/OSTIA.

LD [S5] **pong-engine**, *An engine that runs pong games on Matlab and paddles are controlled by reinforcement learner agents. I implemented this piece of software for a reinforcement learning course*, Matlab, https://github.com/pooyanjamshidi/pong-engine.

CC [S4] **MDLoad**, *MDload is a model-driven workload generation tool that automatically generates requests to a web application by simulating a set of users*, Java+Matlab, https://github.com/imperial-modaclouds?query=modaclouds-mdload.

LD [S3] **Fuzzy-Q-Learning**, *An implementation of Fuzzy Q-Learning for making cloud auto-scaling more intelligent through online policy learning*, Matlab, https://github.com/pooyanjamshidi/Fuzzy-Q-Learning.

LD [S2] **RobusT2Scale**, *A cloud auto-scaler based on fuzzy reasoning*, Matlab, https://github.com/pooyanjamshidi/RobusT2Scale.

LD [S1] **ASIM**, *A program that automatically identifies services out of business processes*, Java, https://github.com/pooyanjamshidi/ASIM.

Data

My research is experimental, I typically release the data that I collect for my research to the public community for replication.

[D2] **ASE 2017**, *Transfer Learning for Performance Modeling of Configurable Systems: An Exploratory Analysis*, **Subject systems**: SaC, SQLite, SPEAR, X264, https://github.com/pooyanjamshidi/ase17.

[D1] **MASCOTS 2016**, *An Uncertainty-Aware Approach to Optimal Configuration of Stream Processing Systems*, **Subject systems**: Apache Storm, Apache Spark, Apache Hadoop, Apache Cassandra, https://zenodo.org/record/56238.

Services

Guest Editor

IEEE Software **IEEE Software Special Issue on Microservices, Guest editor**, *Co-edited with James Lewis (ThoughtWorks), Stefan Tilkov (innoQ), Claus Pahl, and Nabor Mendonça, This special issue attracted 26 submissions, a record number in IEEE Software*, https://www.computer.org/software-magazine/2017/02/10/microservices-call-for-papers/.

Co-organizer

ENSEMBLE 2019 2nd International Workshop on Ensemble-based Software Engineering for Modern Computing Platforms (co-located with ESEC/FSE 2019), co-chair.

SEAMS 2017 The 12th International Symposium on Software Engineering for Adaptive and Self-Managing Systems, publicity and proceedings chair (Co-organized with David Garlan, Bashar Nuseibeh, Javier Camára, and Nicolás D'Ippolito).

CloudWays 2017 International Workshop on Cloud Adoption and Migration, Workshop co-chair (Co-organized with Claus Pahl, and Nabor Mendonça).

Dagstuhl 2016 **Software Performance Engineering in the DevOps World**, *Seminar co-organizer (Co-organized with Andre van Hoorn, Philipp Leitner, and Ingo Weber.)*, http://www.dagstuhl.de/16394.

CloudWays 2016 International Workshop on Cloud Adoption and Migration, Workshop co-chair.

CloudWays 2015 International Workshop on Cloud Adoption and Migration, Workshop co-chair.

Program Committees (Conferences)

ICPE 2021 International Conference on Performance Engineering

XP 2020 International Conference on Agile Software Development

ICSE 2020 International Conference on Software Engineering

SEAMS 2020 15th Software Engineering for Adaptive and Self-Managing Systems

ICPE 2020 International Conference on Performance Engineering

VaMoS 2020 International Working Conference on Variability Modelling of Software-Intensive Systems

ECSA 2019 13th European Conference on Software Architecture

SATURN 2019 SEI Architecture User Network (SATURN) Conference

ICSA 2019 International Conference on Software Architecture (Tool Track)

Microservices 2019 International Conference on Microservices

SEAMS 2019 14th Software Engineering for Adaptive and Self-Managing Systems

ICSOC 2018 16th International Conference on Service-Oriented Computing

ECSA 2018 12th European Conference on Software Architecture

ICDCS 2018 38th International Conference on Distributed Computing Systems, Distributed Green Computing and Energy Management track

SEAMS 2018 13th Software Engineering for Adaptive and Self-Managing Systems

ECSA 2017 11th European Conference on Software Architecture

SEAMS 2017 12th Software Engineering for Adaptive and Self-Managing Systems

EUSPN 2017 8th Emerging Ubiquitous Systems and Pervasive Networks

SIGMOD 2016 ACM SIGMOD 2016 Reproducibility

SEAMS 2016	11th Software Engineering for Adaptive and Self-Managing Systems
EUSPN 2016	7th Emerging Ubiquitous Systems and Pervasive Networks
ICSOFT 2016	13th International Conference on Software Technologies
ICSOFT 2015	12th International Conference on Software Technologies

Program Committees (Workshops)

AKSAS 2018	International Workshop on Architectural Knowledge for Self-Adaptive Systems
MLMH 2018	KDD Workshop on Machine Learning for Medicine and Healthcare
AMS 2018	International Workshop on Architecting with MicroServices
SQUADE 2018	International Workshop on Software Qualities and their Dependencies
LTB 2018	Load Testing and Benchmarking of Software Systems
ASBDA 2017	International Workshop on Autonomic Systems for Big Data Analytics
AMS 2017	International Workshop on Architecting with MicroServices
QUDOS 2017	International Workshop on Quality-Aware DevOps
LTB 2017	Load Testing and Benchmarking of Software Systems
QUORS 2017	International COMPSAC Workshop on Quality Oriented Reuse of Software
LTB 2016	Load Testing and Benchmarking of Software Systems
QUORS 2016	International COMPSAC Workshop on Quality Oriented Reuse of Software

Journal Reviews

Brackets indicate the number of papers I reviewed (excluding revisions).

TSE (12)	IEEE Transactions on Software Engineering
Software (7)	IEEE Software
TAAS (6)	ACM Transactions on Autonomous and Adaptive Systems
TOSEM (4)	ACM Transactions on Software Engineering and Methodology
TSC (3)	IEEE Transactions on Service Computing
TCC (3)	IEEE Transactions on Cloud Computing
SPI (3)	Wiley Software Process: Improvement and Practice
IST (3)	Elsevier Information and Software Technology
SoSyM (2)	Springer Software & Systems Modeling
Oxf Comp Jrnl (2)	Oxford Academic Computer Journal
JSEP (2)	Wiley Journal of Software: Evolution and Process
SPE (2)	Wiley Software: Practice and Experience
Cloud (2)	IEEE Cloud Computing
Computing (3)	Springer Computing
IET Software (2)	IET Software
JPDC (2)	Journal of Parallel and Distributed Computing
CSUR (1)	ACM Computing Surveys
Micro (1)	IEEE Micro
ASC (1)	Elsevier Applied Soft Computing
Computer (1)	IEEE Computer
Computing (1)	IEEE Internet Computing
JNCA (1)	Elsevier Journal of Network and Computer Applications
TNSM (1)	IEEE Transactions on Network and Service Management
JCST (1)	Springer Journal of Computer Science and Technology
JCC (1)	Springer Journal of Cloud Computing
SOCA (1)	Springer Service Oriented Computing and Applications
JSA (1)	Elsevier Journal of Systems Architecture
JBCS (1)	Springer Journal of the Brazilian Computer Society
JSS (1)	Elsevier Journal of Systems and Software
JWE (1)	Journal of Web Engineering
IBM (1)	IBM Journal of Research and Development
Computers (1)	MDPI Computers
Entropy (1)	MDPI Entropy
ROBOT (1)	Elsevier Robotics and Autonomous Systems
Supercomp. (1)	Springer Journal of Supercomputing

Sub-reviewer

ICSE 2018	International Conference on Software Engineering
ASE 2017	International Conference on Automated Software Engineering
FSE 2017	ACM SIGSOFT Symposium on the Foundations of Software Engineering

ICCAC 2016	International Conference on Cloud and Autonomic Computing
CLOUD 2016	International Conference on Cloud Computing
CLOUD 2015	International Conference on Cloud Computing
ICAC 2015	International Conference on Autonomic Computing
ICDCS 2015	International Conference on Distributed Computing Systems
ICPE 2015	International Conference on Performance Engineering
PESOS 2015	International Workshop on Principles of Engineering Service-Oriented and Cloud
SBRC 2015	The Brazilian Symposium on Computer Networks and Distributed Systems
ESOCC 2014	European Conference on Service-Oriented and Cloud Computing
ECSA 2013	European Conference on Software Architecture

Grant proposal review

2020	National Science Foundation (NSF) PPoSS ML panel
2019	Dutch Research Council (NWO)
2018	Canadian Science Fund (FRQnet)
2018	Austrian Science Fund (FWF)
2016	Dutch Technology Foundation (STW)

Other reviews

2016	Elsevier book proposal review

Industry Services

SPEC	During my postdoctoral research at Imperial, I was actively collaborating with the DevOps RG group for developing a DevOps framework by consolidating tools to better integrate performance monitoring and architectural refactoring.
Intel and Microsoft	During my postdoctoral research in IC4 (Irish cloud center with 40+ industry members), I was actively collaborating with Giovani Estrada and Chris Woods from Intel and Niall Moran from Microsoft for developing auto-scaling mechanisms for OpenStack and Azure platforms, see [**C15, C14, C18**].
IPMA Project Management Excellence	My responsibility was to *assess* the quality of the projects submitted for the "National Project Management Excellence Award" and to judge its excellence by exploiting the IPMA Project Excellence Model. The assessment process included individual assessments, consensus meetings, site visits and report writing.
Apache	I am active in the Apache Storm community contributing to the auto-scaling feature of the framework: https://issues.apache.org/jira/browse/STORM-594
Imperial Consultants	I was a research consultant on Big Data and Machine Learning in Imperial Consultants, a self-funding, wholly owned company of Imperial College London.

Outreach Activities

Outreach	High school student mentor for CREST Awards 2015, Project title: "Can a program beat the Turing test?", Queens Park School, UK.
Outreach	Young Scientists Exhibition 2013, Lero stands, Dublin, Ireland, 2013.

Research Visits

June 2017	**NC State University**, *Host: Tim Menzies*, USA, 2-days.
Oct 2014	**Vienna University of Technology**, *Host: Ivona Brandic, Soodeh Farokhi*, Austria, 1-month.

Aug 2014 **Edinburgh Napier University**, *Host: Xiaodong Liu*, UK, 1-month visit.
Jan 2015 **University of Fortaleza**, *Host: Nabor Mendonça*, Brazil, 1-month visit.

Membership in Technical Communities

2019– AAAI.

2015– SPEC RG DevOps Performance Group.

2011– IEEE, ACM, ACM SIGSOFT

Immigration Status

US Permanent Resident (Green Card holder since April 2020)

References

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