

Education

Concordia University, Montreal, Canada

Ph.D. in Computer Science, 2006 - 2009

- **Thesis:** Formal and Quantitative Approach to Non-Functional Requirements Modeling and Assessment in Software Engineering.
- **Advisors:** Dr. Olga Ormandjieva (Department of Computer Science and Software Engineering, Concordia University, Montreal, Canada) & Dr. Maya Daneva (Department of Information Systems, University of Twente, The Netherlands).
- **Awards:** Ph.D. Thesis Writing Award in 2009, Nomination for General Governor of Canada Academic Medal in 2009.

Concordia University, Montreal, Canada

Master's in computer science, 2004 - 2005

- **Thesis:** Towards an Aspect-Oriented Software Development Model with Quality Measurements.

University of Windsor, Windsor, Canada

Bachelor of Science: Computer Science, 2002 - 2003

- **Awards:** Outstanding Academic Performance Award in 2003, On President's Roll in 2003.

Lebanese American University, Lebanon

Bachelor of Engineering: Computer Engineering, 1995 - 2000

- **Awards:** Placed on Honor's List.

Academic Experience

The Pennsylvania State University (Penn State), Engineering Division, Pennsylvania, U.S.A

Associate Professor of Software Engineering, May 2018 - Current.

Assistant Professor of Software Engineering, July 2012 - May 2018.

- Conducting funded and contractual interdisciplinary research projects, jointly with industry and in workplaces on topics in the areas of requirements engineering, software quality, empirical software engineering, software architecture, blockchain, and the Internet of Things.
- Teaching graduate-level courses in software engineering in face-to-face, online and blended formats.
- Participating in developing the software engineering curriculum.
- Mentoring graduate students to develop their professional potential.
- **Awards:** Nominated for the Teaching Excellence Award (2015, 2018, 2021, 2022).

Innopolis University, Innopolis, Russia

Associate Visiting Professor, March 2014 - December 2020

- Teaching software engineering courses at the Master of Science in Information Technology program - developed jointly with Carnegie Mellon University.
- Participating in developing the curriculum for different programs at the university level.

Carnegie Mellon University, Institute for Software Research, Pittsburgh, U.S.A

Visiting Scholar, March 2014 – December 2016.

- Developing the MIST-SE program within the newly established Innopolis University in Russia.

Concordia University, Computer Science and Software Engineering Department, Montreal.

Adjunct Assistant Professor, January 2010 – July 2012

- Responsible for developing courses syllabus, teaching, designing, and grading assignments, projects, and exams.
- Conducting and supervising extensive world-class research in the areas of software quality, measurement, Aspect-Oriented, and requirements engineering.
- **Awards:** Teaching Fellowship Award.

Ecole de Technologie Supérieure (ETS), Université du Québec, Montréal, Canada

Postdoctoral Researcher in Software Engineering, September 2010 – July 2012

- Conducted funded research on quantifying the impact of incorporating architectural tactics into software architectural patterns.

Concordia University, Montreal, Canada

Research Assistant, September 2004- September 2009

- Conducted extensive world-class research in the areas of software quality, measurement, Aspect-Oriented, and requirements engineering.

University of Twente, Enschede, The Netherlands

Visiting Research Assistant, July 2006- July 2007

- Conducted extensive world-class research in the Quality-Driven Requirements Engineering and Architectural Design (QUADREAD project).

**Industrial
Experience,
Consultancy &
Funded
Industrial
Projects**

Soramitsu, Japan

Business Unit Manager (Consultation), July 2018 – March 2019

- Provided strategic advice to senior divisional staff on the implementation of new blockchain technology (Iroha) and the financial software products that were implemented on top of it.
- Provided consultation on a variety of business transformations, technical policy issues, and regulations to assure compliance of the newly developed products with technical and procedural standards and local market laws.

Citibank, Montreal

Quality Assurance Strategy Manager (Consultation), January 2018 – April 2018

- Constructing and orchestrating the overall QA strategy for VisionPlus project aiming at data and technology migration to the cloud.

SAP AG, Montreal, Canada

Senior Quality Engineer, October 2011 – October 2012

- Acted as the Owner of the “Trade Promotion Management – HANA” project from a Quality perspective throughout the SDLC.
- Ensured product compliance with SAP product standards and the ISO-9001.
- Created the test concept for the project scenarios.
- Defined the specific quality requirements into the release backlog.

- Held accountable for planning & execution of all quality measures related to the project.
- Consolidated quality and test status and reports to stakeholders.
- Performed causal analysis and identified the areas of improvement and acted accordingly.

Morgan Stanley, Montreal, Canada

Senior Associate, April 2010 – October 2011

- Designed & executed backend, component level tests for tactical & large integration projects in a complex business environment.
- Implemented process improvement and testing automation projects to improve the overall testing cycle.
- Participated in the development and support of the testing program aimed at supporting multiple testing efforts simultaneously. This implied coordinating testing activities with other QA resources available in London, New York, Budapest, and Asia.
- Assisted with test strategy articulation, planning, and management of individual testing events and act actively in an ongoing effort to bring new testing knowledge into STP-QA.
- Identified testable events and develop the test cases/test scripts.
- Technologies: UNIX, Quality Center, MOPI, Saturn (Eclipse plugin), JIRA, DB2, PuTTY.

Nokia, Montreal, Canada

Senior Quality Assurance Specialist, September 2006 - April 2010

- Reviewed and analyzed requirements specification and system architecture artifacts to provide consulting and implementation of a test strategy based on the requirements and design specification
- Wrote test plans, test cases, and test reports for mobile applications (e.g. Email, IM, Social Mixer).
- Performed Black Box, White Box, Test Automation, and Performance Testing duties for Integration, System, and Regression Testing activities on different modules of the system projects.
- Logged defects and follow their life cycle.
- Designed test enhancements, Defect fixes.
- Analyzed and documented test results.
- Technologies: Rational ClearQuest, Mercury Quality Center, SyncMI, UNIX, Oracle Developer, PuTTY, FileZilla, Altova XMLSpy.

Positron Public Safety Systems, Montreal, Canada

Senior Software Developer, June 2005- March 2006

- Designed and developed database architecture for security systems projects: P911, PCAD, PMAP.
- Gathered and documented requirements before beginning database development to ensure a thorough understanding of problems being solved.
- Created and updated data models with appropriate tools prior to deployment to the development environment.
- Wrote and modified SQL Server and Oracle PL/SQL procedures, functions, views, and other database objects.
- Tested database components in an isolated test environment before moving objects to production.

- Reviewed objects developed by peers in the data management group to ensure objects adhere to development standards and service level agreements.
- Technologies: MS SQL Server 2000, Oracle DB 10g.

TCC The Computer Center, Windsor, Canada

Software Engineer, January 2003 - April 2004

- Wrote coherent and intelligent Software Requirements Specifications and design documentation using UML.
- Led and supported the design and implementation of internal modules of high-performance applications used at the customer service department.
- Generated and executed test plans, cases, and suites.
- Technologies: Java, J2EE, JSP, Servlets, XML, XHTML, XSL, DTD Java Beans, Oracle Developer 9i, SQL, PL/SQL.

International Turnkey Systems, Kuwait

Software Engineer, 2001 - 2002

- Planned resources and schedules for functional and performance QA work for new and ongoing enterprise Internet-based software applications used by the leading telecommunication companies in the Middle East.
- Developed and directed software system testing procedures and documentation.
- Provided consultation and technical support through different phases of the projects including inception, elaboration, construction, and transition.
- Technologies: Broadvision 6.0, Java, Oracle DB 9i, Oracle Developer 6i.

New Horizons, Kuwait

Software Instructor, 2000 - 2001

- Delivered training and teaching of professional courses and tracks such as Oracle developer track, JAVA, Certified Internet Webmaster track, and Microsoft track.
- Member of a team in analyzing and developing certain applications used for training purposes.

Teaching Experience

The Pennsylvania State University (Penn State), July 2012 - Current

Requirements Engineering (Graduate Level)
 Software Systems Architecture (Graduate Level)
 Software Construction (Graduate Level)
 Software Systems Design (Graduate Level)
 Software Testing (Graduate Level)
 Advanced Software Engineering Studio (Graduate Level)
 Pattern-Oriented Design (Graduate Level)

Innopolis University, March 2014 - July 2020

Database Management Systems (Undergraduate Level)
 Software Engineering, I (Undergraduate Level)
 Software Engineering II (Undergraduate Level)
 Software Architecture (Undergraduate level, Graduate Level)
 Pattern-Oriented Design (Graduate Level)
 Advanced Topics in Software Testing and Quality Management (Undergraduate Level)

System Requirements Specification (Undergraduate Level, Graduate Level)
Software Verification and Testing (Undergraduate Level, Graduate Level)
Measurement in Software Development. (Undergraduate Level, Graduate Level)
Software Process (Undergraduate Level)
Operating Systems (Undergraduate Level)
Software Engineering, I (Undergraduate Level)
Software Development Project (Undergraduate Level)

Books

1. Neto, V.V., Kassab, M. (2023). *What every engineer should know about Smart Cities*. CRC Press Taylor & Francis Group.
2. Laplante, P., Kassab, M. (2022). *Requirements engineering for software and systems*. 4th edition. Auerbach Publications.
3. Laplante, P., Kassab, M. (2022). *What every engineer should know about Software Engineering*. CRC Press Taylor & Francis Group.
4. DeFranco, J., Kassab, M. (2021). *What every engineer should know about the internet of things?* CRC Press Taylor & Francis Group.
5. Kassab, M. (2009). *Non-functional requirements: modeling and assessment*. VDM Verlag.

**Journals,
Magazines &
Book Chapters**

1. Kassab, M., Ambaba, B., Poud, E.S., Fox, B. (2023). Is the Solution for Cybercrime Also a Path to Greater Productivity?. *IEEE Software*, Accepted.
2. Gomes, J., Esteves, I., Neto, V. V. G., David, J. M. N., Braga, R., Arbex, W., Kassab, M., de Oliveira, R. F. (2023). A scientific software ecosystem architecture for the livestock domain. *Information and Software Technology*, 160, 107240.
3. Kassab, M. & DeFranco, J. (2022). IoTility: A Contemporary View. *IEEE Computer*, 55(10), 70-74.
4. Neto, V.V., Kassab, M., Lopes, V., Oliveira, R., Bulcao-Neto, R. (2022). The State of IoT for Agribusiness in Brazil. *IEEE Computer*. Accepted.
5. Lopes, V., Neto, V.V., Oliveira, R., Bulcao-Neto, R., Kassab, M., Silva, C. (2022). A Systematic Mapping Study on IoT-Based Software Systems for Precision Agriculture. *International Journal of Computer Applications in Technology*. Accepted.
6. Kassab, M., & Laplante, P. (2022). The Current and Evolving Landscape of Requirements Engineering in Practice. *IEEE Software*, 39(5), 76-83.
7. Kassab, M., & Laplante, P. (2022). Trust Considerations in Open Banking. *IT Professional*, 24(1), 70-37.
8. Voas, J., Laplante, P., Kassab, M., Lu, S., Ostrovsky, R., Kshetri, N. (2022). Cybersecurity Considerations for Open Banking Technology and Emerging Standards. *NIST Internal or Interagency Report (NISTIR) 8389*.

9. Laplante, P., & Kassab, M. (2022). Open Banking: what it is, where it's at, and where it's going?. *IEEE Computer*, 55(1), 53-63.
10. Kassab, M., Laplante, P., DeFranco, J., Graciano Neto, & V. V., Giuseppe, D. (2021). Exploring the profiles of software testing jobs in the United States. *IEEE Access*, 68905 – 68916.
11. Ahmad, N., Laplante, P., Defranco, J., & Kassab, M. (2021). A Cybersecurity educated community. *IEEE Transactions on Emerging Topics in Computing*, DOI Bookmark: 10.1109/TETC.2021.3093444
12. Kassab, M., Graciano Neto, V. V., Giuseppe, D., & Malas, T. (2021). Could blockchain help with COVID-19 crisis? *IT Professional*, 23(4), 44-50.
13. Kassab, M., DeFranco, J., & Laplante, P. (2020). A systematic literature review on internet of things in education: benefits and challenges. *Journal of Computer Assisted Learning*, 36(2), 115-127.
14. Kassab, M., DeFranco, J., Malas, T., Laplante, P., Giuseppe, D., & Graciano Neto, V. V. (2019). Exploring research in blockchain for healthcare and a roadmap for the future. *IEEE Transactions on Emerging Topics in Computing*, DOI 10.1109/TETC.2019.2936881.
15. Graciano Neto, V. V., Horita, F., Dos Santos, R., Viana, D., Kassab, M., Manzano, W., & Nakagawa, E. (2019). S.o.B. (Save our Budget): A simulation-based method for prediction of acquisition costs of constituents of a system-of-systems. *iSys - Brazilian Journal of Information Systems*, 12(4).
16. Kassab, M., Mazzara, M., Lee, J., & Succi, G. (2018). Software architectural patterns in practice: an empirical study. *Innovations in Systems and Software Engineering: NASA Journal*, 14(4), 263–271.
17. Kassab, M., DeFranco, J., & Voas, J. (2018). Smarter education. *IT Professional*, 20(5), 20–24.
18. DeFranco, J., Kassab, M., & Voas, J. (2018). How do you create an internet of things workforce? *IT Professional*, 20(4), 8–12.
19. Laplante, P., Kassab, M., Laplante, N. L., & Voas, J. (2017). Building caring healthcare systems in the internet of things. *IEEE systems journal*, 12(3), 3030–3037.
20. Kassab, M., DeFranco, J. F., & Laplante, P. A. (2017). Software testing: The state of the practice. *IEEE Software*, 34(5), 46–52.
21. DeFranco, J., Kassab, M., Laplante, P., & Laplante, N. (2017). The non-functional requirement focus in medical device software: a systematic mapping study and taxonomy. *Innovations in Systems and Software Engineering: NASA Journal*, 13(2-3), 81–100.
22. Kassab, M., & Kilicay-Ergin, N. (2015). Applying analytical hierarchy process to system quality requirements prioritization. *Innovations in Systems and Software Engineering: NASA Journal*, 11(4), 303–312.

23. Kassab, M., Neill, C., & Laplante, P. (2014). Software development practices and software quality: A survey. *Software Quality Professional*,16(4).
24. Kassab, M., Neill, C., & Laplante, P. (2014). State of practice in requirements engineering: contemporary data. *Innovations in Systems and Software Engineering: NASA Journal*, 10(4), 235–241.
25. Kassab, M., & Ormandjieva, O. (2014). Non-functional requirements in process-oriented approaches. In *Encyclopedia of Software Engineering three-volume set*. ISBN: 1-4200-5977-7. Auerbach Publications.
26. Kassab, M., El-Boussaidi, G., & Mili, H. (2012). A quantitative evaluation of the impact of architectural patterns on quality requirements. *Springer's Studies in Computational Intelligence Book Series*, 173–184.
27. Kassab, M., Ormandjieva, O., & Daneva, M. (2010). Managing the changes and the attainable scope of non-functional requirements in software engineering. *Book chapter in Methodologies for Non-Functional Requirements in Service Oriented Architecture*, ISBN 978-1605667942.
28. Kassab, M., Ormandjieva, O., Daneva, M., & Abran, A. (2008). Non-functional requirements size measurement method (NFSM) with COSMIC-FFP. In *Software Process and Product Measurement* (pp. 168–182). Springer.
29. Shaban-Nejad, A., Ormandjieva, O., Kassab, M., & Haarslev, V. (2009). Managing requirement volatility in an ontology-driven clinical LIMS using category theory. *International Journal of Telemedicine and Applications*. *arXiv preprint arXiv:0906.1842*.

Conference and Workshops Publications

1. Teixeira, P., Lebtag, B., Kassab, M., Horita, F., Graciano Neto, VV. (2023). Externalizing Requirements for Achieving Operational Independence in Systems-of-Systems. *ACM/IEEE 11th International Workshop on Software Engineering for Systems-of-Systems and Software Ecosystems (SESoS 2023), co-located with the 45th IEEE/ACM International Conference on Software Engineering (ICSE 2023)*.
2. Nazir, A., Singh, M., Destefanis, G., Kassab, M., Jamsheed, M., Neykova, R., Tonelli, R. (2023). Towards a Scalable Dual-Sided Blockchain Architecture with Concurrency Protocols. *Fourth IEEE International Workshop on Blockchain-based Architectures (BlockArch 2023) in conjunction with the 20th IEEE International Conference on Software Architecture (ICSA 2023)*.
3. Nazir, A., Singh, M., Destefanis, G., Kassab, M., Jamsheed, M., Neykova, R., Tonelli, R. (2023). An Optimized Concurrent Proof of Authority Consensus Protocol. *The 6th International Workshop on Blockchain Oriented Software Engineering (IWBOSE 2023) in conjunction with the 30th IEEE International Conference on Software Analysis, Evolution and Reengineering*.
4. Zeggari, M., Lambiotte, R., Abadi, A., Kassab, M. (2023). An Efficient and Decentralized Blockchain-based Commercial Alternative. *Fourth IEEE International Workshop on Blockchain-based Architectures (BlockArch 2023) in conjunction with the 20th IEEE International Conference on Software Architecture (ICSA 2023)*.

5. Kassab, M., DeFranco, J., & Laplante, P. (2022). Investigating Bugs in AI-Infused Systems: Analysis and Proposed Taxonomy. *First annual Workshop on Assured Artificial Intelligence and Machine Learning (WAAM) in conjunction with 33rd IEEE International Symposium on Software Reliability Engineering (ISSRE)*. Charlotte, North Carolina, USA.
6. DeFranco, J., Kassab, M., & Laplante, P. (2022). A Taxonomy of Critical AI System Characteristics for Use in Proxy System Testing. *First annual Workshop on Assured Artificial Intelligence and Machine Learning (WAAM) in conjunction with 33rd IEEE International Symposium on Software Reliability Engineering (ISSRE)*. Charlotte, North Carolina, USA.
7. Laplante, P., Kassab, M., & DeFranco, J. (2022). Proxy Verification and Validation For Critical AI Systems. *29th Annual IEEE Software Technology Conference (STC 2022)*. Gaithersburg, USA.
8. Batista, p., Neto, V.V., Rodrigues, C., & Kassab, M. (2022). ARC-SoISE: Towards a Reference Architecture for Constituents of Educational Systems-of-Information Systems. *The 17th IEEE International Conference on System of Systems Engineering (SoSE)*. Rochester, USA.
9. Gomes, J., Lopes, V.C., Neto, V.V.G., De Oliveira, R.F., Kassab, M., David, J.M.N., Braga, R., & Arbex, W. (2022). Deriving Experiments from E-SECO Software Ecosystem in the Technology Transfer Process for the Livestock Domain. *In 2022 IEEE/ACM 10th International Workshop on Software Engineering for Systems-of-Systems and Software Ecosystems (SESoS)*. Pittsburgh, USA.
10. Kassab, M. (2021). Exploring non-Functional requirements for blockchain-oriented systems. In *Proceedings of the Workshop on Requirement Engineering for Software Startups and Emerging Technologies in conjunction with 29th IEEE International Requirements Engineering Conference*. Notre Dame, USA.
11. Kassab, M. (2021). How is requirements engineering performed in small businesses? In *Proceedings of the Workshop on Requirement Engineering for Software Startups and Emerging Technologies in conjunction with 29th IEEE International Requirements Engineering Conference*. Notre Dame, USA.
12. Lima, R., Kassab, M., & Graciano Neto, VV. (2021). Discussing Availability Quality Attribute in Systems-of-Systems Architectures based on a Simulation Experiment. In *SBES 2021- 35th Brazilian Symposium on Software Engineering*.
13. Kassab, M., Destefanis, G., DeFranco, J., & Pranav, P. (2021). Blockchain-Engineers Wanted: an Empirical Analysis on Required Skills, Education and Experience, In *4th International Workshop on Emerging Trends in Software Engineering for Blockchain in conjunction with 43rd ACM/IEEE International Conference on Software Engineering*. Madrid. Spain.
14. Kassab, M., & Destefanis, G. (2021). Blockchain and contact tracing applications for COVID-19: The opportunity and the challenges. In *4th International Workshop on Emerging Trends in Software Engineering for Blockchain in conjunction with the 28th IEEE International Conference on Software Analysis, Evolution and Reengineering*. Honolulu, HI.

15. Lebtog, B., Teixeira, P., Kassab, M., Graciano Neto V.V. (2021). A Conceptual map towards the standardization of executable models terminology. In the Workshop on Modeling and Simulation of Software-intensive Systems (MSSiS) in conjunction with the Brazilian Congress on Software: Theory and Practice.
16. Kassab, M., & Graciano Neto, V.V. (2021). Digital surveillance technologies to combat COVID-19: A contemporary view. In Complex Adaptive Systems 2021 Conference. Malvern. PA.
17. DeFranco, J., & Kassab, M. (2021). Smart home research themes: An analysis and taxonomy. In Complex Adaptive Systems 2021 Conference. Malvern. PA.
18. Lopes, V.C., Jácome, M., Ribeiro Soares, D., Oliveira, R., Graciano Neto, V.V., Kassab, M., & Soares, A. (2020). A systematic mapping study on software testing for systems-of-systems. In 5th Brazilian Symposium on Systematic and Automated Software Testing in conjunction with the Brazilian Conference on Software: Practice and Theory (CBSOft). Brazil.
19. Graciano Neto, V.V., Kassab, M., Araújo Lebtog, B. G., Teixeira, P., Mohsin, A., & Oquendo, F. (2020). Software architectures to deal with constituent uncertainties in systems-of-systems. In 1st Uncertainty in Modeling Workshop in conjunction with the 23rd ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (Models20). Montreal, Canada.
20. Teixeira, P. G., Araújo Lebtog, B.G., Graciano Neto, V.V., Mohsin, A., Kassab, M., Fernandes, J., & Pereira dos Santos, R. (2020). Constituent system design: A software architecture approach. In SESoS/WDES 2020 in conjunction with 2020 IEEE International Conference on Software Architecture (ICSA 2020). Salvador, Brazil.
21. Kassab, M., DeFranco, J., Malas, T., Destefanis, G., & Graciano Neto, V. V. (2019). Investigating quality requirements for blockchain-based healthcare systems. In International Workshop on Emerging Trends in Software Engineering for Blockchain in conjunction with 41st ACM/IEEE International Conference on Software Engineering. Montreal. Canada.
22. Teixeira, P. G., Lopes, V. H., Pereira dos Santos, R., Kassab, M., & Graciano Neto, V. V. (2019). The status quo of systems-of-information systems. In SESoS-WEDS 2019: Joint 7th ICSE International Workshop on Software Engineering for Systems-of-Systems and 13th Workshop on Distributed Software Development, Software Ecosystems and Systems-of-Systems. Montreal. Canada.
23. Kassab, M., DeFranco, J., Malas, T., Graciano Neto, V. V., & Destefanis, G. (2019). Blockchain: A panacea for electronic health records? In International Workshop on Software Engineering for Healthcare in conjunction with 41st ACM/IEEE International Conference on Software Engineering. Montreal. Canada.
24. Graciano Neto, V. V., Basso, F., Santos, S., Santos, N., Kassab, M., Toacy Oliveira, C. W., & Nakagawa, E. (2019). Model-driven engineering ecosystems. In SESoS-WEDS 2019: Joint 7th ICSE International Workshop on Software Engineering for Systems-of-Systems and 13th Workshop on Distributed Software Development, Software Ecosystems and Systems-of-Systems. Montreal. Canada.

25. Kassab, M., & Mazzara, M. (2019). Towards Designing Smart Learning Environments with IoT. In DEVOPS 2019 - Second international workshop on software engineering aspects of continuous development and new paradigms of software production and deployment. Château de Villebrumier, France.
26. Sangwan, R., Kassab, M., & Capitolo, C. (2019). Architectural Considerations for Blockchain-Based Systems for Financial Transactions. In Complex Adaptive Systems 2019 Conference. Malvern. PA.
27. DeFranco, J., & Kassab, M. (2019). Considerations for an internet of things curriculum. In 2019 Hawaii International Conference on System Sciences (HICSS-52). Maui. HI.
28. Kassab, M., Graciano Neto, V. V., & Allian, A. (2019). Investigating quality requirements from a human perspective in IoT-based software architectures for education. In International Workshop on Software Architectures and Human Values in conjunction with the 13th European Conference on Software Architecture (ECSA). ISBN 978-1-4503-7142-1. Paris. France.
29. Afanasyev, I., Mazzara, M., Chakraborty, S., Zhuchkov, N., Maksatbek, A., Kassab, M., & Distefano, S. (2019). Towards the internet of robotic things: Analysis, architecture, components and challenges. In 2019 Developments in eSystems Engineering (DESE). Kazan. Russia.
30. Rocha, V. F., Alves, L. d. S., Graciano Neto, V. V., & Kassab, M. (2019). A review on the adoption of agile methods in the technology development for smart cities. In 2nd Workshop Brasileiro de Cidades Inteligentes (WBCI). Belem. Brazil.
31. Kassab, M. (2018). Testing practices of software in safety critical systems: Industrial survey. In 20th International Conference on Enterprise Information Systems, ICEIS 2018 (pp. 359-367). SciTePress. Funchal. Portugal.
32. Wang, C., Cui, P., Daneva, M., & Kassab, M. (2018). Understanding what industry wants from requirements engineers: an exploration of RE jobs in Canada. In Proceedings of the 12th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement. Oulu, Finland.
33. Kassab, M., DeFranco, J., & Neto, V. G. (2018). An Empirical Investigation on the Satisfaction Levels with the Requirements Engineering Practices: Agile vs. Waterfall. In 2018 IEEE International Professional Communication Conference (ProComm) (pp. 118-124). Toronto. Canada.
34. Neto, V. V. G., Manzano, W., Kassab, M., & Nakagawa, E. Y. (2018). Model-based engineering & simulation of software-intensive systems-of-systems: experience report and lessons learned. In Proceedings of the 12th European Conference on Software Architecture: Companion Proceedings. Madrid. Spain.
35. Neto, V. V. G., dos Santos, R. P., Viana, D., & Kassab, M. (2018). How Much Does It Cost? A Simulation-Based Method for Cost Prediction in Systems-of-Systems Acquisition Processes. In Proceedings of the III Workshop on Social, Human, and Economic Aspects of Software (WASHES 2018). Natal. Brazil.

36. Kassab, M., DeFranco, J., & Laplante, P. A. (2017). Software development for medical devices: State of practice. In 2017 IEEE 28th Annual Software Technology Conference (STC). Gaithersburg, MD.
37. Kassab, M. (2017). A contemporary view on software quality requirements in agile and software architecture practices. In 2017 IEEE 25th International Requirements Engineering Conference Workshops (REW) (pp. 260-267). Lisbon, Portugal.
38. Kassab, M., & Destefanis, G. (2017). Requirements Effort Estimation: The State of the Practice. *Collegium of Economic Analysis Annals, Warsaw School of Economics, Collegium of Economic Analysis*, issue 43 (pp. 87-102).
39. Kassab, M. (2015). The changing landscape of requirements engineering practices over the past decade. In 2015 IEEE 23rd International Requirements Engineering Conference Workshops (REW). Ottawa, Canada.
40. Kassab, M., & Destefanis, G. (2015). Estimating Development Effort for Software Architectural Tactics. In *International Andrei Ershov Memorial Conference on Perspectives of System Informatics* (pp. 158-169). Springer. Kazan. Russia.
41. Ortu, M., Destefanis, G., Kassab, M., Counsell, S., Marchesi, M., & Tonelli, R. (2015). Would you mind fixing this issue? In *International Conference on Agile Software Development* (pp. 129-140). Springer. Helsinki. Finland.
42. Ortu, M., Destefanis, G., Kassab, M., & Marchesi, M. (2015). Measuring and understanding the effectiveness of Jira developers communities. In *Proceedings of the 6th International Workshop on Emerging Trends in Software Metrics* (pp. 3-10). Florence, Italy.
43. Kassab, M. (2014). An empirical study on the requirements engineering practices for agile software development. In 2014 40th EUROMICRO Conference on Software Engineering and Advanced Applications (pp. 254-261). Verona, Italy.
44. Kassab, M. (2014). Early Effort Estimation for Quality Requirements by AHP. In 14th International Conference on Computational Science and Its Applications. Guimarães, Portugal.
45. Kassab, M., & El-Boussaidi, G. (2013). Towards Quantifying Quality, Tactics and Architectural Patterns Interactions. In *International Conference on Software Engineering & Knowledge Engineering (SEKE)* (pp. 441-446). Boston, MA.
46. Kassab, M. (2013). An integrated approach of AHP and NFRs framework. In *IEEE 7th International Conference on Research Challenges in Information Science (RCIS)*. Paris, France.
47. Kassab, M., & El-Boussaidi, G. (2012). Towards a knowledge-based representation of non-functional requirements. In the 7th International Conference on Software Engineering Advances. Lisbon, Portugal.
48. Kassab, M., Ormandjieva, O., & Daneva, M. (2011). Relational-model based change management for non-functional requirements: Approach and experiment. In 2011 5th International Conference on Research Challenges in Information Science (RCIS). Guadeloupe - French West Indies. France.

49. Abdukalykov, R., Hussain, I., Kassab, M., & Ormandjieva, O. (2011). Quantifying the impact of different non-functional requirements and problem domains on software effort estimation. In 2011 9th International Conference on Software Engineering Research, Management and Applications (SERA) (pp. 158-165). Baltimore. MD.
50. Kassab, M., Daneva, M., & Ormandjieva, O. (2009). Towards an early software effort estimation based on functional and non-functional requirements. In International Workshop on Software Measurement (pp. 182-196). Amsterdam. The Netherlands.
51. Kassab, M., Ormandjieva, O., & Daneva, M. (2009). An ontology-based approach to non-functional requirements conceptualization. In 2009 4th International Conference on Software Engineering Advances (pp. 299-308). Porto. Portugal.
52. Kassab, M., Ormandjieva, O., & Daneva, M. (2009, March). A metamodel for tracing non-functional requirements. In 2009 IEEE WRI World Congress on Computer Science and Information Engineering (Vol. 7, pp. 687-694). Los Angeles. CA.
53. Kassab, M., Daneva, M., & Ormandjieva, O. (2008). A meta-model for the assessment of non-functional requirement size. In 2008 24th Euromicro Conference Software Engineering and Advanced Applications (pp. 411-418). Parma. Italy.
54. Kassab, M., Ormandjieva, O., & Daneva, M. (2008). A traceability metamodel for change management of non-functional requirements. In 2008 6th International Conference on Software Engineering Research, Management and Applications (pp. 245-254). Prague. The Czech Republic.
55. Kassab, M., Ormandjieva, O., & Daneva, M. (2007). Towards a scope management of non-functional requirements in requirements engineering. In MeReP07: Workshop on Measuring Requirements for Project and Product Success. Palma de Mallorca. Spain.
56. Daneva, M., Kassab, M., Ponisio, M. L., Wieringa, R. J., & Ormandjieva, O. (2007, May). Exploiting a Goal-Decomposition Technique to Prioritize Non-functional Requirements. In the 10th Workshop in Requirements Engineering (WER 2007) (pp. 190-196). Toronto. Canada.
57. Kassab, M., Daneva, M., & Ormandjieva, O. (2007, August). Scope management of non-functional requirements. In 33rd EUROMICRO Conference on Software Engineering and Advanced Applications (EUROMICRO 2007) (pp. 409-417). Lübeck. Germany.
58. Kassab, M., & Ormandjieva, O. (2006). Towards an aspect-oriented software development model with tractability mechanism. In Proceedings of Workshop on Early Aspects: Aspect-Oriented Requirements Engineering and Architecture Design. Bonn. Germany.
59. Kassab, M., Ormandjieva, O., & Constantinides, C. (2005). Providing quality measurement for aspect-oriented software development. In 12th Asia-Pacific Software Engineering Conference (APSEC'05) (pp. 7-pp). Taipei. Taiwan.
60. Ormandjieva, O., Kassab, M., & Constantinides, C. (2005). Measurement of cohesion and coupling in OO analysis model based on crosscutting concerns. In Proceedings of the 15th International Workshop on Software Measurement (IWSM2005) (pp. 305-320). Montreal. Canada.

61. Kassab, M., Constantinides, C., & Ormandjieva, O. (2005). Specifying and Separating Concerns from Requirements to Design: A Case Study. In the IASTED International Conference on Automation, Control, and Information Technology (pp. 18-27). Novosibirsk, Russia.

Technical Reports

1. Kassab, M., & El-Boussaidi, G. (2011). Incorporating Security and Performance Tactics into Pipes/Filters, Layered, MVC and Broker Architectural Patterns. *Technical report, Department of Software Engineering, Ecole de Technologie Supérieure (ETS), Université du Québec*. Montreal. Canada.
2. Kassab, M., Daneva, M., & Ormandjieva, O. (2007). Early quantitative assessment of non-functional requirements. *Technical Report TR-CTIT-07-35 Centre for Telematics and Information Technology, University of Twente*. Enschede. The Netherlands. ISSN 1381-3625.

Professional Development and Certificates

- Carnegie Mellon certified to teach "Architectures for Software Systems".
- Instructional Practice Certificate - Penn State University
- Introduction to Quality Matters - Penn State University
- iCarnegie 's Teaching Excellence Certified - Carnegie Mellon University.
- Foundations for Online Teaching certificate - Penn State University
- Effective Online Teaching Certified - Penn State University.
- Effective VLN Instruction Certified - Penn State University.
- Sun Certified Java Programmer.
- Oracle Certified Application Developer.
- Oracle Certified Internet Application Developer.
- Microsoft Certified Professional.
- Certified Internet Webmaster exams -Foundation-Site Designer.
- Certified Internet Webmaster Associate.
- Authorized Oracle trainer for Oracle Designer Track and Advanced PL/SQL courses.

Conference Organization

2023 - Co-organizer of the "4th Workshop on Blockchain-based Architectures (BlockArch'23)" in conjunction with IEEE International Conference on Software Architecture (ICSA 2022), L'Aquila, Italy

2022 - Co-organizer of the "3rd Workshop on Blockchain-based Architectures (BlockArch'22)" in conjunction with IEEE International Conference on Software Architecture (ICSA 2022), Honolulu, HI.

2021 - Co-organizer of the "2nd Workshop on Blockchain-based Architectures (BlockArch'21)" in conjunction with IEEE International Conference on Software Architecture (ICSA 2021), Stuttgart, Germany.

2020 - Co-organizer of the "1st Workshop on Blockchain-based Architectures (BlockArch'20)" in conjunction with IEEE International Conference on Software Architecture (ICSA 2020), Salvador, Brazil.

2019 - Co-organizer of the: "2nd Workshop on Internet of Things in Education: The Current State and the Future" in conjunction with HICSS - The Hawaii International Conference on System Sciences, Maui, HI.

2019 - Co-organizer of the special session: "The Internet of Things for Educators and Learners" in conjunction with 14th International Conference on Evaluation of Novel Approaches to Software Engineering, Crete, Greece.

2018 - Co-organizer of the: "1st Workshop on Internet of Things in Education: The Current State and the Future" in conjunction with HICSS – The Hawaii International Conference on System Sciences, Wailea- Makena, HI.

2018 - Co-organizer of the workshop: "Designing Resilient Intelligent Systems for Testability and Reliability (STaR)" in conjunction with International Conference on Software Architecture, Seattle, WA.

2016 - Program chair of the Winter School on Software Engineering, Innopolis, Russia.

2010 - Local arrangement chair for 8th ACIS International Conference on Software Engineering Research, Management and Applications (SERA 2010), Montréal, Canada.

2010 - Co-organizer of the: "Special Session on Formal and Quantitative Approaches for Non -Functional Requirements Modeling and Assessment in Software Engineering" in conjunction with SERA'10 conference, Montreal, Canada.

2007 - Co-organizer of the workshop: "Quantifying the estimation of efforts for building non-functional requirements" in conjunction with the International Conference on Software Process and Product Measurement, Mallorca, Spain.

Invited Presentations

2023 - School of Computing, National University of Singapore (*Seminar*)

2023 - School of Science and Technology, IE University (*Seminar*)

2022 - Department of Computer Science, Reykjavik University, Iceland (*Seminar*).

2020 - Information Technology Department, Wageningen University & Research, The Netherlands (*Seminar*).

2018 - Department of Electrical & Computer Engineering, Florida Polytechnic University (*Seminar*).

2018 - Faculty of Engineering, University of Regina, Canada (*Seminar*).

2018 - Rose-Hulman Institute of Technology (*Seminar*).

2018 - FX Innovation, Montreal, Canada (*Invited Speaker*)

2018 - Computer Engineering Department, Bogazici University, Istanbul, Turkey (*Seminar*).

2017 - Software Engineering Department, Ecole de Technologie Supérieure (ETS), Montreal (*Seminar*).

2017 - Computer Science Department, UQAM, Montreal, Canada (*Seminar*).

2017- Computer Science Department, California State University, Sacramento, CA (*Seminar*).

2015 - College of Engineering, Antalya International University, Turkey (*Seminar*).

2015 - U.A. Whitaker College of Engineering, Florida Gulf Coast University, FL (*Seminar*).

2015 - Computer Science Department, California State University San Marcos, CA (*Seminar*).

2015 - Department of Computer & Electrical Engineering/Computer Science, California State University, Bakersfield, CA (*Seminar*).

2015 - Computer Science Department, California State University Northridge, CA (*Seminar*).

2015 - Monfort College of Business, University of Northern Colorado, CO (*Seminar*).

2013 - Computer Science Department, California State Polytechnic University, Pomona, CA (*Seminar*).

2013 - Howard R. Hughes College of Engineering, University of Nevada Las Vegas, NV (*Seminar*).

2011 - Department of Computer Science, Masaryk University, Czech Republic (*Seminar*).

2011 - Computer Science Department, Nova Southeastern University, FL (*Seminar*).

2008 - IEEE International Conference on Software Architecture, Special Session on Non-Functional Requirements, Vancouver, Canada (*Keynote Speaker*).

Professional Services

- Active program committee member for many international conferences.
- Active reviewer for many academic journals and magazines.
- IEEE - Technical Committee (TC) on Software Engineering. (2019 - Present).
- An active member in Hyperledger healthcare working group.
- Member of the IEEE committee to redevelop the IEEE Certified Software Development Professional (CSDP) training curriculum, course materials, and exams (2013-2015).
- Member of the Editorial Advisory Board for the forthcoming Encyclopedia of Computer Science and Technology.

University Committees Membership

Pennsylvania State University (2012- Current)

- Chair of the Search Committee for Assistant Professor position in AI
- Software Engineering Program Assessment
- Diversity Committee
- Students Affairs Committee
- Research Committee
- Innovation Committee
- Sustainability Committee
- Faculty Academic Affairs Committee
- Fixed-Term Faculty Promotion Committee

Innopolis University, Russia (2014 - 2016)

- Students Admission Committee
- Curriculum Development Committee

M.S. Student Supervision

- Rolan Marat – Co-supervised with Prof. Olga Ormanjieva. Concordia University. Graduated in 2012.
- Daniel J. Bowden, co-supervised with Prof. Phillip Laplante. Penn State University Graduated in 2015.
- Fyodor Muratov, Innopolis University. Graduated in 2017.
- Artyom Urazmanov, Innopolis University. Graduated in 2017.
- Christopher Capitolo, co-supervised with Prof. Phillip Laplante. Penn State University. Graduated in 2018.
- Deepak Aakula, co-supervised with Prof. Joanna DeFranco. Penn State University. Graduated in 2018.
- Mohini Priya Kumar. Co-supervised with Prof. Joanna DeFranco. Penn State University. Graduated 2018.
- Shivang Suchak. Co-supervising with Prof. Joanna DeFranco. Penn State University. In progress.

Ph.D. Student Supervision

- Paulo Gabriel Teixeira. Co-supervising with Prof. Valdemar Vicente Graciano Neto. In progress.