Jaakko Suutala

Curriculum Vitae

Personal details

Full name	Suutala, Jaakko Markus
Gender	Male
Date of writing the CV	February 23, 2022
Date and place of birth	27th June 1979, Oulu, Finland
Citizenship	Finland
Current residence	Oulu, Finland

Education and degrees awarded

28.08.2012 **Doctor of Science in Technology, D.Sc. (Tech)**, *University of Oulu*, Finland, Embedded systems and software.

24.06.2004 **Master of Science in Engineering, M.Sc. (Eng)**, *University of Oulu*, Finland, Computer Science and engineering.

Current position

01.08.2019–Present **Assistant Professor (Tenure track)**, *University of Oulu*.

01.08.2019–Present **Techical Advisor and Co-Founder**, *IndoorAtlas Ltd*, Oulu, Finland.

Previous work experience

2012–2019 **Chief Data Scientist and Co-Founder**, *IndoorAtlas Ltd.*, Oulu, Finland.

2012–2016 **Post-Doctoral Researcher**, *University Of Oulu*, Part-time.

2006–2016 **Chief Scientist and Co-Founder**, *Nelilab Inc*, Part-time.

2004–2013 **Teaching Assistant**, *University of Oulu*, Part-time.

Autumn 2007 **Visiting Researcher**, *Tokyo University of Agriculture and Technology*, Tokyo, Japan, Travel fund from InfoTech Oulu.

2004–2012 **Research Scientist**, *University of Oulu*.

2002–2004 **Research Assistant**, *University of Oulu*.

Summer 2001 **Desktop Application Programmer**, *AvestaPolarit Oy*.

Summer 2000 **Desktop Application Programmer**, *AvestaPolarit Oy*.

Summer 1999 **Process Worker**, *AvestaPolarit Oy*.

1998–1999 **Military Service**, *Ivalo, Finland*.

Summer 1996 **Maintenance Worker**, *Outokumpu Polarit Oy*.

Research projects

2022–2024 **Principal Intestigator**, *University of Oulu*, ADAPTINFA, Academy of Finland.

2019–2021 **Director of Research**, *University of Oulu*, ArctiqDC: Arctic Data centers, Interreg.

2016–2018 **Chief Data Scientist, R&D**, *IndoorAtlas Ltd.*, European Union Horizon 2020 project.

2013–2016 **Post-Doctoral Researcher**, *Global RF Spectrum Opportunity Assessment*, WifiUS joint Finland-US program, Academy of Finland and Tekes.

2013 **Chief Data Scientist, R&D**, *IndoorAtlas Ltd*, Tekes, Young and Innovative Companies.

2011–2012 **Research Scientist**, *INCA - Interactive Context-aware System for Energy Efficient Living*, Academy of Finland.

2012 **R&D Engineer**, *Mobile Application and wearable sensors rehabilitation system*, Nelilab Inc., Subconstract project.

2011 **R&D Engineer**, *Miniature heart rate monitor and its* , Nelilab Inc., Subcontract project.

2010 **R&D Engineer**, *Elderly home assistant monitoring system*, Nelilab Inc., EU project.

2010–2012 **Research Scientists**, *Minotaurus - Human-Machine Interaction and Intelligent Sensor Networks*, EU Regional Development Fund.

2006–2009 **Research Scientists**, *XPRESS - FleXible Production Experts for reconfigurable aSSembly technology*, EU.

2003–2005 **Research Scientist**, *BEACON - Behavioural Modelling in Context-Aware Systems*, Academy of Finland.

2002–2003 **Research Assistant**, *CAPNET - Context-aware Pervasive Networking*, Tekes (the Finnish Funding Agency for Technology and Innovation).

Research funding as well as leadership and supervision

Major research funding

2022–2024 **Principal Intestigator**, *University of Oulu*, ADAPTINFA, Academy of Finland.

2020–2022 **As a member of research team**, *HR-VO2 Max Sensor - Next Generation Optical Sport Sensor for Wearable Devices*, Business Finland, 552K euros.

2016–2018 **As a member of IndoorAtlas founder team**, *EU Horizon 2020 project funding for R&D and business development*, 2.2M euros.

2010–2012 **As a member of BISG research team**, *INCA - Interactive Context-aware System for Energy Efficient Living*, Academy of Finland, 2.4k euros.

2006–2010 **As a member of BISG research team**, *XPRESS - FleXible Production Experts for reconfigurable aSSembly technology*, EU, 1.1M euros.

2009 **Personal research grand**, *The Nokia Foundation, Personal research grant*.

2009 **Personal research grand**, *Seppo Säynäjäkankaan säätiö, Personal research grant*, 4k euros.

2008 **Personal research grand**, *Emil Aaltosen säätiö, Personal research grant*.

2007 **Personal research travel fund**, *Infotech Oulu*.

2007 **Personal research grand**, *Tauno Tönningin säätiö*, 4k euros.

2005 **Personal research grand**, *Tauno Tönningin säätiö*, 3k euros.

2005 **Personal research grand**, *Tekniikan edistämissäätiö*, 4k euros.

Leadership in research work

2019–Present **Assistant Professor (Tenure track)**, *University of Oulu*.

2019–Present **Co-founder and Technical Advisor**, *IndoorAtlas Ltd.*.

2012–2019 **Co-founder and chief data scientist**, *IndoorAtlas Ltd.*.

2006–2016 **Co-founder, chief scientist, and project manager**, *Nelilab Inc,*.

2013–2016 **Project Manager and secondary supervisor**, *Global RF Spectrum Opportunity Assessment*, University of Oulu.

2011–2012 **Project Manager and secondary supervisor**, *INCA - Interactive Context-aware System for Energy Efficient Living*.

Merits in teaching and pedagogical competence

Courses

2020– **Instructor**, *Artificial Intelligence*, Level: Bachelor.

2020– **Instructor**, *Multimodal Data Fusion*, Level: Master.

2019 **Teaching Assistant**, *Artificial Intelligence Introduction*, Level: Graduate course.

2004–2013 **Teaching Assistant**, *Title: Operating Systems*, Level: Bachelor/Master.

Pedagogical Competence

2020–2022 **University Pedagogy Studies**, *25 credit points*.

Supervision and examination of theses

2021– **Supervisor**, *D.Sc. (tech) thesis*, Jarkko Kemppainen.

2022– **Supervisor**, *D.Sc. (tech) thesis*, Miika Malin.

2013–2020 **Co-Supervisor**, *D.Sc. (tech) thesis*, Tuomo Alasalmi.

2020– **Supervisor**, *M.Sc. theses*, 5.

2012– **Secondary supervisor**, *M.Sc. theses*, 2.

2012– **Reviewer**, *M.Sc. theses*, 7.

2020– **Supervisor**, *B.Sc. theses*, 2.

2014– **Chair or member of steering committees**, *D.Sc. (tech) thesis*, 5.

Member of international application funding peer evaluation committees

2007 Engineering and Physical Sciences Research Council, UK

2006 Engineering and Physical Sciences Research Council, UK

Membership in Scientific Societies

Member of IEEE, IEEE Computational Intelligence Society, IEEE Signal processing Society, and IEEE Systems, Man, and Cybernetics Society

Pattern Recognition Society of Finland, International Association for Pattern Recognition (IAPR)

Finnish Artificial Intelligence Society (FAIS), European Association for Artificial Intelligence (EurAI)

Member of scientific conference program committees

International Conference on Signal Image Technology & Internet Based Systems (SITIS)

Second International Workshop on Ubiquitous Mobile Instrumentation (UbiMi2013)

Workshop on Ubiquitous Computing for Symbio-Information Processing (UCSIP 2011)

Referee for scientific and scholarly journals

AIP Advances

IEEE Sensors journal

International Journal of Human-Computer Studies

Engineering Letters

IEEE Transactions on Information Forensics and Security

IEEE Transactions on Systems, Man, and Cybernetics

Neurocomputing

Sensors Journal

Journal of Applied Ergonomics: Human Factors in Technology and Society

International Joint Conference on Neural Networks (IJCNN)

International Conference on Learning Representations (ICLR)

International Conference on Ubiquitous Computing (Ubicomp)

International Conference on Human-Robot Interaction (HRI)

International Conference on Grid and Pervasive Computing (GPC)

International Conference on Natural Computing (ICNC)

International Symposium on Applied Computing and Computational Sciences (ACCS)

International Conference on Agents and Artificial Intelligence (ICAART)

International Conference on Informatics in Control, Automation and Robotics (ICINCO)

International Symposium on Medical Information and Communication Technology (ISMICT)

International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous)

International Workshop on Ubiquitous Mobile Instrumentation (UbiMi)

Workshop on Ubiquitous Computing for Symbio-Information Processing (UCSIP)

Scientific publications and societal impact of research

Publications Total number: 24 (peer-reviewed), Number of citations: 804, h-index: 13 (Google scholar)

A1: Journal article (refereed), original research

5. C. De Lima et al. (2021), Convergent Communication, Sensing and Localization in 6G Systems: An Overview of Technologies, Opportunities and Challenges, in IEEE Access.

4. Alasalmi, Tuomo; Suutala, Jaakko; Koskimäki, Heli; Röning, Juha (2020). Better Classifier Calibration for Small Data Sets. ACM Transactions on Knowledge Discovery in Data.
3. Marko Höyhtyä, Aarne Mämmelä, Marina Eskola, Marja Matinmikko, Juha Kalliovaara, Jaakko Ojaniemi, Jaakko Suutala, Reijo Ekman, Roger Bacchus, and Dennis Roberson (2016), Spectrum occupancy measurements: A survey and use of interference maps. IEEE Communications Surveys & Tutorials, Volume: 18, Issue: 4., pp. 2386–2414
2. Fujinami, S. Kagatsume, S. Murata, T. Alasalmi, J. Suutala, J. Röning (2014). An Augmented Refrigerator with the Awareness of Wasteful Electricity Usage. International Journal of Internet, Broadcasting and Communication 6 (1), pp. 1–4.
1. Suutala J., Röning J. (2008) Methods for person identification on a pressure-sensitive floor: experiments with multiple classifiers and reject option. International Journal on Multi-Sensor, Multi-Source Information Fusion. Special Issue on Application of Ensemble Methods, 9(1):21–40, Elsevier Science.

A4: Conference proceedings (refereed)

19. Lauri Tuovinen, Jaakko Suutala (2021). Ontology-based Framework for Integration of Time Series Data: Application in Predictive Analytics on Data Center Monitoring Metrics. 13th International Conference on Knowledge Engineering and Ontology Development.
18. Alasalmi T, Koskimäki H, Suutala J and Röning J (2016), Getting more out of small data sets: improving the calibration performance of isotonic regression by generating more data. Proceedings of the 10th International Conference on Agents and Artificial Intelligence - Volume 2, pp. 379–386
17. Alasalmi T, Koskimäki H, Suutala J and Röning J (2016), Instance Level Classification Confidence Estimation. Advances in Intelligent Systems and Computing. The 13th International Conference on Distributed Computing and Artificial Intelligence 2016, Springer
16. Alasalmi T, Koskimäki H, Suutala J, Röning J (2015), Classification Uncertainty of Multiply Imputed Data. 2015 IEEE Symposium Series on Computational Intelligence: IEEE Symposium on Computational Intelligence and Data Mining (2015 IEEE CIDM).
15. Taher T., Attard R., Riaz A., Roberson D. A.,Taylor J., Zdunek K. J., Halllio J., Ekman R., Paavola J., Suutala J., Röning J., Matinmikko M., Höyhtyä M. and MacKenzie A. B. (2014), Global Spectrum Observatory Network Setup and Initial Findings. 9th International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM), pp. 79-88.
14. Tuomo Alasalmi, Jaakko Suutala, Juha Röning (2012), Real-time Non-intrusive Appliance Load Monitor - Feedback System for Single-point per Appliance Electricity Usage, SMARTGREENS 2012, pp. 203–208.
13. Trang Thuy Vu, Akifumi Sokan, Hironori Nakajo, Kaori Fujinami, Jaakko Suutala, Pekka Siirtola, Tuomo Alasalmi, Ari Pitkänen, Juha Röning (2011) Feature Selection and Activity Recognition to Detect Water Waste from Water Tap Usage, IEEE 17th International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2011), pp. 138–141.
12. Trang Thuy Vu, Akifumi Sokan, Hironori Nakajo, Kaori Fujinami, Jaakko Suutala, Pekka Siirtola, Tuomo Alasalmi, Ari Pitkänen, Juha Röning (2011) Detecting water waste activities for water-efficient living, Ubicomp 2011, pp. 579–580.

11. Suutala J., Fujinami K., and Röning J. (2010) Persons Tracking with Gaussian Process Joint Particle Filtering, IEEE International Workshop on Machine Learning for Signal Processing (MLSP 2010), 29 August- 1 September, Kittilä, Finland. pp. 160–165.
10. Kätevä J., Laurinen P., Rautio T., Suutala J., Tuovinen L., Röning J. (2010) DBSA - A Device-Based Software Architecture for Data Mining, Proceedings of the 2010 ACM symposium on Applied Computing (SAC2010).
9. Suutala J., Fujinami K., Röning J. (2008) Gaussian Process Person Identifier Based on Simple Floor Sensors, 3rd European Conference on Smart Sensing and Context (EuroSSC 2008), October 29-31, Zürich, Switzerland, pp. 55–68.
8. Suutala J., Pirttikangas S., Röning J. (2007) Discriminative Temporal Smoothing for Activity Recognition from Wearable Sensors. In: Proc. of the 4th International Symposium on Ubiquitous Computing Systems (UCS2007) Tokyo, Japan, pp. 182–195.
7. Suutala J., Röning J. (2005) Combining classifiers with different foot- step feature sets and multiple samples for person identification. In: IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP05), Philadelphia, PA, USA, Vol. 5, pp. 357–360.
6. Tikanmäki A., Suutala J., Röning J. (2005) Instrumentation and Software Achitecture for a Smart Room. In: Proc. of Smart Systems 2005, May 2-3, Seinäjoki, Finland.
5. Koho K., Suutala J., Seppänen T., Röning J. (2004) Footstep pattern matching from pressure signals using segmental semi-markov models. In: Proc. 12th European Signal Processing Conference (EUSIPCO2004), Vienna, Austria, pp. 160–1612.
4. Suutala J., Pirttikangas S., Riekki J., Röning J. (2004) Reject-optional LVQ-based two-level classifier to improve reliability in footstep identification. In: Ferscha A. and Mattern F., editors, Proc. 2nd International Conference on Pervasive Computing (PERVASIVE 2004), Springer-Verlag, Linz/Vienna, Austria, Lecture Notes in Computer Science, Vol. 3001, pp. 182–187.
3. Suutala J., Röning J. (2004) Towards the adaptive identification of walkers: Automated feature selection of footsteps using distinction-sensitive LVQ. In: Proc. of International Workshop on Processing Sensory Information for Proactive Systems (PSIPS 2004), Oulu, Finland, pp. 61–67.
2. Pirttikangas S., Suutala J., Riekki J., Röning J. (2003) Learning vector quantization in footstep identification. In: Hamza M., editor, Proc. 3rd IASTED International Conference on Artificial Intelligence and Applications (AIA 2003), IASTED, ACTA Press, Benalmadena, Spain, pp. 41–417.
1. Pirttikangas S., Suutala J., Riekki J., Röning J. (2003) Footstep identification from pressure signals using Hidden Markov Models. In: Proc. Finnish Signal Processing Symposium (FINSIG03), Tampere, Finland, pp. 124–128.

B3: Conference proceedings (non-refereed)

2. Suutala J. (2010) Learning to Track Persons with Gaussian Process Joint Particle Filtering. The 3rd Asia-Europe Workshop on Ubiquitous Computing (AEWUC 2010), May 16, Helsinki, Finland.
1. Suutala J. (2008) Machine Learning Approaches to Activity Recognition and Person Identification. The 1st Asia-Europe Workshop on Ubiquitous Computing (AEWUC 2008), June 31 - August 1, Oulu, Finland.

D4: Research reports (non-refereed)

2. Ali, S., Saad, W., and Steinbach, D. (Eds.). (2020). White Paper on Machine Learning in 6G Wireless Com- munication Networks [White paper]. (6G Research Visions, No. 7). University of Oulu.
1. de Lima, C., Belot, D., Berkvens, R., Bourdoux, A., Dardari, A., Guillaud, M., Isomursu, M., Lohan, E.-S., Miao, Y., Barreto, A. N., Aziz, M. R. K., Saloranta, J., Sanguanpuak, T., Sarieddeen, H., Seco-Granados, G., Suutala, J., Svensson, T., Valkama, M., Wymeersch, H., an dvan Liempd, B. (Eds.). (2020). 6G White Paper on Localization and Sensing [White paper]. (6G Research Visions, No. 12). University of Oulu.

G2: Master's thesis

1. Suutala J. (2004) Methods for Person Identification from Pressure Signal of Walking Steps. M.Sc. (Eng) Thesis. University of Oulu, Department of Electrical and Information Engineering, Oulu, Finland, 90p., (in Finnish)

G4: Doctoral dissertation (monograph)

1. Suutala J. (2012) Learning Discriminative Models from Structured Multi- sensor Data for Human Context Recognition, Doctoral Thesis, University of Oulu, Department of Computer Science and Engineering, 221 pages.

H2: Invention announcement (pending patent application)

2. Date: 11.12.2014, Patent number: US20140365119A1, Title: Detecting information about motion of mobile device Orientation of mobile device measuring earth's magnetic field indoors, Inventors: Janne Haverinen, Jaakko Suutala, Mikko Perttunen
1. Date: 04.12.2014, Patent number: US20140357305A1, Title: Orientation of mobile device measuring earth's magnetic field indoors, Inventors: Janne Haverinen, Mikko Perttunen, Jaakko Suutala

I2: ICT software

1. IndoorAtlas Mobile applications, Software development kit, and cloud-based services, url: `https://www.indooratlas.com`

Media coverage

13.03.2018 Kauppalehti magazine, Indoor Atlas on yksi on Oulun uusista teknologialupauksista.
11.09.2014 Kaleva magazine, Oululainen IndoorAtlas puskee Kiinan markkinoille.
11.06.2013 Aktuumi magazine, Hummerit näytti suunnan Indoor Atlakselle
07.09.2012 Tekniikan Akateemiset -lehti, Sormenjälki se on kävelytyylikin.
16.08.2012 Radio-city (on web), Minotaurus tunnistaa kasvoilta pelon.
16.08.2012 3T (on web), Robotti tunnistaa ihmisen - vastaa kun kysytään.
16.08.2012 Tietokone (on web), Suomalaisrobotti oppii tulkitsemaan tunteita
16.08.2012 Satakunnan kansa (on web), Robotit ovat kohta luontevaa juttuseuraa.
16.08.2012 Aamulehti (on web), Minotaurus-robotti vastaa kysymyksiin - Ei pysty aina erottamaan naista ja miestä.
16.08.2012 Tekniiikka & Talous (on web), Oululaisrobotti tunnistaa ihmisen tunteita - jopa paremmin kuin toinen ihminen.
16.08.2012 Kaleva magazine (on web), Robotti vastailee ihmisen kysymyksiin netin avulla.
16.08.2012 Academy of Finland (on web), Uusi tekniikka mahdollistaa tunnetilat tunnistavan robotin.

26.07.2012 Kaleva magazine, Yli lattioiden.

27.06.2012 Yle news (on web), Älylattia tunnistaa ihmisen askelista.

27.06.2012 Tekniikka & Talous (on web), Seuraavaksi lattia oppii tunnistamaan, kuka sen päällä kävelee.

26.06.2012 Yle, TV news, Northern Finland, Interview about doctoral thesis, biometrics, machine learning, and AI.