Paavo Nieminen

PhD, University Teacher
Faculty of Information Technology
University of Jyväskylä

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Curriculum Vitae
5.3.2020

BASIC INFORMATION

Surname, given names:	Nieminen, Paavo Juhani
Gender:	male
Date of this CV:	5.3.2020
Date and place of birth:	27.5.1979, Pieksämäki
Citizenship:	Finnish
Current residence:	Jyväskylä
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EDUCATION AND DEGREES AWARDED

21.12.2016   **Doctor of Philosophy**
Faculty of Information Technology, University of Jyväskylä
Major subject: Mathematical Information Technology.
For verification, the school can be contacted via email it-studyaffairs@jyu.fi, telephone +358 14 260 1211 or by regular mail: Faculty of Information Technology, PO Box 35, FI-40014 University of Jyväskylä.

29.12.2006   **Master of Science**
Faculty of Information Technology, University of Jyväskylä
Major subject: Mathematical Information Technology.
Minor subject: Mathematics.

30.5.1998   **matriculation examination**
Pieksämäen lukio (upper secondary school of Pieksämäki)

OTHER EDUCATION AND TRAINING, QUALIFICATIONS AND SKILLS

8.5.2019   **Pedagogical Studies in Adult Education (APO)**
Faculty of Education and Psychology, University of Jyväskylä
Pedagogical studies focusing on adult education and conferring a formal teacher qualification, in compliance with Section 19 of the Finnish Government Decree on University Degrees (794/2004). Some further information about these pedagogical studies can be found in https://www.jyu.fi/koulutus/en/universitypedagogy

26.4.2018   **Basic Studies in University Pedagogy (YPE)**
Faculty of Education and Psychology, University of Jyväskylä
YPE comprises the first 25 ECTS credit points of the total of 60 credits in teacher qualification training.

30.9.2017   **Goodie training**
University of Jyväskylä
The Goodie wellbeing advisers are there for you when you need someone to talk to. They are University staff members, who have been selected and trained to support the wellbeing of students. More information about the Goodie system: https://www.jyu.fi/studentlife/en/wellbeing/goodies

Other skills
Learned while doing and not yet forgotten; verifiable from my teaching and publication records.
I can use and teach the following without having to prepare with further studying myself. Programming languages: 386 assembly, AMD64 assembly, Bash, C, C++, FORTH, Fortran 77, GLSL, HTML, Java, JavaScript, LaTeX, Matlab, Octave, POSIX shell, PHP, Python Tool programs: Emacs, GDB, git, Inkscape, utilities described in POSIX (section Shell and Utilities)
Curricular topics: Procedural programming. Object-oriented programming. Entry-level functional programming concepts. Advanced topics in machine language and system programming. Basic analysis and design of algorithms. Basics of abstract linear algebra and calculus. Basics of numerical algorithms and multiobjective optimization. Basics and intermediate topics of Machine Learning. Some advanced topics in Artificial Neural Networks. Basics of signal processing. Basic and intermediate topics in computer graphics. Academic writing.

LINGUISTIC SKILLS

Finnish
Mother Tongue
Daily practice. I claim to be highly proficient in my mother tongue and take pride in my Finnish writings for courses, reports, and other purposes.

Swedish
Studied according to the laws of bilingual Finland
Highest grades in matriculation and university exams; seldom used or tried since then.

German
Studied basics in school
I understand simple written German and survive as a tourist, but I would decline a TV interview in German.

English
Highly proficient
Daily practice as with Finnish. In his review of my PhD thesis in 2016, Jonathan Fieldsend observed: "The thesis, in general, is very well-written. It flows well, and the candidate has obviously spent time honing and refining his prose. Certainly on this aspect [the thesis] is amongst the best I have examined, and the candidate should be commended for this."

CURRENT POSITION

1.10.2016–   **University Teacher**
Faculty of Information Technology, University of Jyväskylä
My current job continuum factually started 1.6.2011 under the title of Doctoral Student. The title was changed to University Teacher 1.10.2016 and the contract was renewed as a permanent position since 1.2.2020. Scope of my work has gradually broadened to comprise a spectrum of activities currently including but not limited to the following:

- Responsible teacher of the following courses:
  - ITKY4000 Orientation to University Studies for Master's Degree Students in Mathematical Information Technology (mandatory MSc course of 2 credits for ca. 100 students yearly)
  - ITKA203 Operating Systems (mandatory BSc course of 5 credits for ca. 100 students yearly)
  - TIEA311 Introduction to Computer Graphics (elective BSc course of 5 credits taken by ca. 20 students yearly)
  - TIES513 Physics Based Modeling and Animation (elective MSc course of 5 credits taken by ca. 5 students yearly)

- Study advisor of ca. 500 Master's degree students since 2011: Personal meeting with each student upon entry and then guidance in studying matters upon request until graduation.

- Marketing, student recruitment, and pre-curricular study advising: Various roles in planning and executing outreach campaigns of the Faculty of Information Technology and the University of Jyväskylä in events, web content, and social media.

- Curriculum development: I have taken part in the curriculum design workgroups of each 3-year curriculum cycle since 2011.

- Other working groups: appointed member of the teaching development group of Mathematical Information Technology and a group discussing the commissioning of the new Sisu study information system. Invited participation in university level self-assessments. Research and collaboration planning with multidisciplinary research groups.

- Master's thesis supervision: So far 17 published theses of which 9 completed during year 2019. Due to the use of teams of 1-3 supervisors depending on topic, my current efficiency is approximately 4 theses per year per supervisor.

- First PhD thesis supervision as secondary supervisor started in 2019.

- Unofficial supportive and educational role in PhD theses other than my own; can only be verified via observing my name as the second author in joint publications with recent doctors.

- Research as much as possible with the time remaining after the above. For example, the currently on-going project HNP-AI funded by the Academy of Finland.

PREVIOUS WORK EXPERIENCE

6/2011 − 9/2016   **Doctoral Student**
Faculty of Information Technology, University of Jyväskylä
My PhD dissertation progressed at its slow pace while my daily calendar was occupied with most of the activities listed above under my current work contents.

7/2010 − 5/2011   **(on scholarship, no working contract)**
Rector's grant, University of Jyväskylä
Full-time doctoral studies and research.

7/2008 − 6/2010   **Researcher, Project Researcher**
Faculty of Information Technology, University of Jyväskylä
Project managerial tasks and research work in the project RISC-PROS funded by European Regional Development Fund (Principal Investigator was professor Tommi Kärkkäinen)

9/2003 − 6/2008   **Research Assistant, Project Assistant, Assistant**
Faculty of Information Technology, University of Jyväskylä
Research and teaching under various job titles and work orders including the following highlights:

- Complete re-design / re-invention of our local "CS1 course" called Programming 1 in 2007. Responsible teacher on the Fall 2007 course instance leading a team of 4 teaching assistants.

- Responsible teacher of course instances offered in the summer periods 2005 – 2007 (Operating systems, Programming 2), building new course material and exercises for the Operating systems course.

- My own Master's thesis (2004) in a research project funded by Tekes (now Business Finland), and producing a journal article based on the thesis work (published 2006).

The period 5/2004 – 7/2005 was part-time (55.2%) and 3/2004 – 4/2004 without any work at the university. These periods overlap with below-mentioned software work for a company.

12/2005 − 5/2006   **software development**
Numerola Oy (Ltd)
(hour-based work contract) Tasks related to the implementation of a numerical computation software and technical writing (user's manual for the software).

3/2004 − 4/2005   **software development**
Numerola Oy (Ltd)
(hour-based work contract) Design and implementation of a multidisciplinary, graphical modeling environment (Kylix, Delphi, Object Pascal)

5/2003 − 8/2003   **Summer Trainee**
Numerola Oy (Ltd)
(summer job) Design and implementation of a multidisciplinary, graphical modeling environment (Kylix, Delphi, Object Pascal)

RESEARCH FUNDING AS WELL AS LEADERSHIP AND SUPERVISION

2018 − 2021   **HNP-AI**
Academy of Finland
Structure Prediction of Hybrid Nanoparticles via Artificial Intelligence (HNP-AI), Principal Investigator is professor Tommi Kärkkäinen. I took part in preparing the funding application and research plan from the very beginning. Currently, I am executing the research under the title "Senior researcher" (self-claimed in the project application for the couple of researchers we deemed to be in approximately "past post-doc" career phase).

2019 −   **Doctoral student supervision**
Faculty of Information Technology, University of Jyväskylä
My first doctoral supervision, as the secondary supervisor along with primary supervisor Tommi Kärkkäinen, started in 2019. The doctoral studies are related to the HNP-AI project.

2008 –	**Master's thesis supervision**
	Faculty of Information Technology, University of Jyväskylä
	Master's theses in Mathematical Information Technology. Sparse until 2017 after which my own PhD degree allows me to be formally appointed in undergraduate thesis supervision. In total, 17 Master's theses supervised by me have been published as of today, 9 of them during the year 2019. Similar number is to be expected in 2020. Usually in supervision teams of 1–3 teachers, yielding an average efficiency of approximately 4 theses per year per supervisor.

MERITS IN TEACHING AND PEDAGOGICAL COMPETENCE
(more detail in the attached Teaching Portfolio)

A mere tip of this iceberg can fit even in the attached Teaching Portfolio. As far as I can understand, teaching merits would be best assessed by sampling randomly chosen former students, which cannot be provided in a CV. I take pride in my work and believe that my track record is solid enough to endure such a sampling any day.

AWARDS, PRIZES, AND HONOURS

24.1.2018	**honorary membership**
	Linkki Jyväskylä ry
	Honorary membership of Linkki Jyväskylä ry, the subject association of Mathematical Information Technology, awarded in appreciation of actively working for the benefit of the students.

FIVE SELECTED PUBLICATIONS
(all 19 publications listed in the attached List of Publications)

2019	[A11] Sami Malola, Paavo Nieminen, Antti Pihlajamäki, Joonas Hämäläinen, Tommi Kärkkäinen, and Hannu Häkkinen (2019). "A method for structure prediction of metal-ligand interfaces of hybrid nanoparticles". In: *Nature communications* 10. DOI: 10.1038/s41467-019-12031-w
2018	[A10] Anneli Heimbürger, Ville Isomöttönen, Paavo Nieminen, and Harri Keto (Oct. 2018). "How do Academics Experience Use of Recorded Audio Feedback in Higher Education? A Thematic Analysis". In: *2018 IEEE Frontiers in Education Conference (FIE)*, pp. 1–5. DOI: 10.1109/FIE.2018.8658635
2017	[A7] Muhammad Zeeshan Asghar, Paavo Nieminen, Seppo Hämäläinen, Tapani Ristaniemi, Muhammad Ali Imran, and Timo Hämäläinen (2017). "Towards Proactive Context-Aware Self-Healing for 5G Networks". In: *Computer Networks* 128, pp. 5–13. DOI: 10.1016/j.comnet.2017.04.053
2013	[A5] Paavo Nieminen, Ilkka Pölönen, and Tuomo Sipola (2013). "Research literature clustering using diffusion maps". In: *Journal of Informetrics* 7.4, pp. 874–886. DOI: 10.1016/j.joi.2013.08.004
2006	[A1] Erkki Heikkola, Kaisa Miettinen, and Paavo Nieminen (2006). "Multiobjective optimization of an ultrasonic transducer using NIMBUS". in: *Ultrasonics* 44.4, pp. 368–380. DOI: DOI:10.1016/j.ultras.2006.04.004

OTHER MERITS

2015 –   **Programming workshops in hobbyist events**
Assembly Summer, Instanssi, Rails Girls
Beginner-friendly workshops as invited volunteer work:

- Graphics programming workshop for beginners (16 hours / 3 days + competition) for Instanssi 2017, Instanssi 2018, Instanssi 2019, and Instanssi 2020 computer festivals: Concept planning, learning material production, and execution responsibility at event. Solo work.

- Graphics programming workshop for beginners (12 hours / 3 days + competition) for Assembly Summer 2018 and Assembly Summer 2019 computer festivals: concept planning, learning material adaptation from another concept (Graffathon), and execution at event. Leading a team of 4 instructors jointly with festival production team.

- Rails Girls concept event (2-day intensive) in Jyväskylä 16.-17.10.2015. Working as an instructor.