

# **Curriculum Vitae**

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[aabtree77.github.io/](https://aabtree77.github.io/)

## **1 Education**

1995-1999: BSc (EE), Vilnius Gediminas Technical University.  
1999-2008: MSc (Tech), DSc (Tech), Helsinki University of Technology.

## **2 Programming Experience (Portfolio)**

### **2.1 Web (Full Stack)**

Tools: VPS, ssh, Linux, Porkbun, Go, React, Postgres, SQLite, sqlc, Makefile, Dockerfile, docker-compose.yml, Tailwind, Excalidraw, Mermaid. Also tried: MongoDB Atlas, render.com, MaxMind Geolocation, MERN, Drizzle ORM, Astro.

#### **2.1.1 Example Project: initials.dev (2026)**

[initials.dev](https://initials.dev)

[github.com/aabtree77/initialsdb](https://github.com/aabtree77/initialsdb)

A public bulletin board which removes registrations, ads, censorship, and fights bots with proof of work and rate limiters. Designed and open sourced backend, frontend, and the VPS infrastructure.

#### **2.1.2 Other Projects**

- [github.com/aabtree77/law2](https://github.com/aabtree77/law2)
- [github.com/aabtree77/miniguestlog](https://github.com/aabtree77/miniguestlog)
- [github.com/aabtree77/schatzhauser](https://github.com/aabtree77/schatzhauser)

### **2.2 Embedded Development**

Tools: ATmega, avr-gcc, ESP32, Ubuntu, routers, MQTT, I2C, libp2p. Wrote firmware for industrial machines (poster printers, box cutters, gym equipment), ensured global device connectivity.

### **2.2.1 Example Project: Adast Maxima MS80 (2020 - 2026)**

[github.com/aabbtree77/adast](https://github.com/aabbtree77/adast)

Rewrote firmware (C, avr-gcc) for the paper cutting machine, ensuring correctness and precision under heavy factory workloads, with some updates throughout the years. The machine is still in use today (2026).

### **2.2.2 Other Projects**

- [github.com/aabbtree77/atmega8-ssd1306-ds18b20-dht22](https://github.com/aabbtree77/atmega8-ssd1306-ds18b20-dht22)
- [github.com/aabbtree77/digispark-attiny85-command-line](https://github.com/aabbtree77/digispark-attiny85-command-line)
- [github.com/aabbtree77/esp32-vpn](https://github.com/aabbtree77/esp32-vpn)

## **2.3 3D**

Tools: OpenGL, GLSL, C++, Nim, Go, Blender, GLFW, GLTF, GTX 760. OpenFOAM, Paraview, ProActive PACA Grid (INRIA). Shape analysis (MDS, geodesics).

### **2.3.1 Example Project 1: Volumetric Lighting**

[github.com/aabbtree77/twinpeakz](https://github.com/aabbtree77/twinpeakz)

A complete rendering pipeline with one of the most beautiful special effects - volumetric lighting.

### **2.3.2 Example Project 2: Automotive Optimization**

[hal.archives-ouvertes.fr/hal-00723427](https://hal.archives-ouvertes.fr/hal-00723427)

A large-scale engineering optimization project involving Navier–Stokes simulations, grid computing, meta-optimization, kriging, Bayesian methods, and Monte Carlo analysis, executed end-to-end on cloud infrastructure in collaboration with academic and industrial partners.

### **2.3.3 Other Projects**

- [github.com/aabbtree77/twinpeakz2](https://github.com/aabbtree77/twinpeakz2)
- [github.com/go-gl/gl/issues/128](https://github.com/go-gl/gl/issues/128)
- [github.com/aabbtree77/chateaudanet](https://github.com/aabbtree77/chateaudanet)
- [diglib.eg.org/handle/10.2312/3dor.20141044.009-015](https://diglib.eg.org/handle/10.2312/3dor.20141044.009-015)
- [github.com/doitsujin/dxvk/issues/3789](https://github.com/doitsujin/dxvk/issues/3789)
- [github.com/Max1412/Graphics2/issues/24](https://github.com/Max1412/Graphics2/issues/24)
- [github.com/godlikepanos/anki-3d-engine/issues/59](https://github.com/godlikepanos/anki-3d-engine/issues/59)

## 2.4 Data Analysis

Tools: Matlab, Scilab, Python. Kriging, Bayes, CMA-ES.

### 2.4.1 Example Project: MNIST Digits

[github.com/aabbtree77/MNIST-0.17](https://github.com/aabbtree77/MNIST-0.17)

This repo contains two world records in the MNIST digit recognition competition. One is by me within classics (log-Gabors with max pooling and kriging) - 0.29%, and the other is a confirmed absolute world record with deep learning by Jonas Matuzas - 0.17%.

### 2.4.2 Other Projects

- [github.com/aabbtree77/imdb-sqlite-queries](https://github.com/aabbtree77/imdb-sqlite-queries)
- [github.com/aabbtree77/uci-marketing-analysis-cart](https://github.com/aabbtree77/uci-marketing-analysis-cart)
- [aabbtree77.github.io/tensors](https://aabbtree77.github.io/tensors)
- [github.com/polydojo/jispy/issues/1](https://github.com/polydojo/jispy/issues/1)

## 3 Employment

01.02.2014-Now	Self-Funded.
01.02.2013-	Faculty of Informatics at the University of Lugano, Via Giuseppe Buffi
31.01.2014	13, CH-6904 Lugano, Switzerland.
01.09.2011-	DEMO, École Nationale Supérieure des Mines de Saint-Étienne, 158
31.12.2012	cours Fauriel, 42023 Saint-Étienne, CEDEX2, France.
01.09.2008-	Department of Neurobiology at the University of California, Los An-
31.08.2009	geles, 73-235 CHS, Los Angeles, CA 90095-1763.
01.05.2000-	Faculty of Information and Natural Sciences at Helsinki University of
31.07.2008	Technology, P.O.Box 5400 (Konemiehentie 2), FI-02015, Finland.

## 4 Publications

1. D. Boscaini, R. Girdziušas, and M. M. Bronstein (2014). "Coulomb shapes: using electrostatic forces for deformation-invariant shape representation." *Eurographics W. 3D Object Retrieval*. [diglib.eg.org/handle/10.2312/3dor.20141044.009-015](https://diglib.eg.org/handle/10.2312/3dor.20141044.009-015).
2. R. Girdziušas, J. Janusevskis, and R. Le Riche (2012). "On integration of multi-point improvements." *NIPS W. Bayesian Opt. Dec. Making*. [www.emse.fr/~leriche/integ\\_multiEI\\_nips2012\\_final.pdf](http://www.emse.fr/~leriche/integ_multiEI_nips2012_final.pdf).
3. R. Le Riche, R. Girdziušas, and J. Janusevskis (2012). "A Study of Asynchronous Budgeted Optimization." *NIPS W. Bayesian Opt. Dec. Making*. [www.emse.fr/~leriche/synchro\\_asynchro\\_final.pdf](http://www.emse.fr/~leriche/synchro_asynchro_final.pdf).
4. R. Girdziušas, R. Le Riche, et al. (2012). "Parallel Budgeted Optimization Applied to the Design of an Air Duct." [hal.archives-ouvertes.fr/hal-00723427](https://hal.archives-ouvertes.fr/hal-00723427).

5. R. Le Riche, R. Girdziušas, D. Villanueva, et al. (2012). "Squaring the engineering optimization circle: Distributed global optimization algorithms for computationally expensive problems." [www.emse.fr/~leriche/rio2012\\_LeRiche.pdf](http://www.emse.fr/~leriche/rio2012_LeRiche.pdf).
6. J. Janusevskis et al. (2012). "Expected Improvements for the Asynchronous Parallel Global Optimization of Expensive Functions: Potentials and Challenges." *LNCS*. vol. 7219, pp. 413–418.
7. R. Girdziušas and D. Ringach (2009). "The Jacobian Singularity in the Thomson Problem. Unpublished." [aabbtree77.github.io/pdfs/ucla2009.pdf](https://aabbtree77.github.io/pdfs/ucla2009.pdf).
8. R. Girdziušas (2008). "Stability and Inference in Discrete Diffusion Scale-Spaces. DSc (PhD) thesis, 2008." [aaltodoc.aalto.fi/handle/123456789/2999](https://aaltodoc.aalto.fi/handle/123456789/2999). Advisors: E. Oja and J. Laaksonen (Helsinki Univ. of Tech.). External examiners: S. Siltanen (Tampere Univ. of Tech.) and K. Ruotsalainen (Univ. of Oulu). Opponents: S. Siltanen and A. Gotchev (Tampere Univ. of Tech.).
9. R. Girdziušas and J. Laaksonen (2007b). "When Is a Discrete Diffusion a Scale-Space?" *ICCV*. [dx.doi.org/10.1109/ICCV.2007.4408895](https://dx.doi.org/10.1109/ICCV.2007.4408895).
10. R. Girdziušas and J. Laaksonen (2007a). "How Marginal Likelihood Inference Unifies Entropy, Correlation and SNR-based Stopping in Nonlinear Diffusion Scale-Spaces." *LNCS*. vol. 4843, pp. 811–820.
11. R. Girdziušas and J. Laaksonen (2005b). "Jacobi Alternative to Bayesian Evidence Maximization." *LNCS*. vol. 3697, pp. 247–252.
12. R. Girdziušas and J. Laaksonen (2005e). "Use of Input Deformations with Brownian Motion." *LNCS*. vol. 3686, pp. 219–228.
13. R. Girdziušas and J. Laaksonen (2005d). "Optimal Stopping and Constraints for Diffusion Models of Signals with Discontinuities." *LNAI*. vol. 3720, pp. 576–583.
14. R. Girdziušas and J. Laaksonen (2005c). "Optimal Ratio of Lamé Moduli with Application to Motion of Jupiter Storms." *LNCS*. vol. 3540, pp. 1096–1106.
15. R. Girdziušas and J. Laaksonen (2005a). "Gaussian Processes of Nonlinear Diffusion Filtering." *IJCNN*, pp. 1012–1017. [dx.doi.org/10.1109/IJCNN.2005.1555991](https://dx.doi.org/10.1109/IJCNN.2005.1555991).
16. R. Girdziušas and J. Laaksonen (2004). "Gaussian Process Regression with Fluid Hyperpriors." *LNCS*. vol. 3316, pp. 567–572.
17. M. Aksela et al. (2003). "Methods for Adaptive Combination of Classifiers." *IJDAR* vol. 6.1, pp. 23–41.
18. M. Aksela et al. (2002). "Class-Confidence Critic Combining." *IWFHR*, pp. 201–206. [dx.doi.org/10.1109/IWFHR.2002.1030909](https://dx.doi.org/10.1109/IWFHR.2002.1030909).
19. R. Girdziušas (2001). "Discriminative Online Recognition of Isolated Handwritten Characters. MSc thesis. Helsinki Univ. of Tech."
20. R. Girdziušas and J. Laaksonen (2001). "Multilayer Perceptron Approach to Non-Rigid Image Matching." *ICONIP*. vol. 1, pp. 491–496.

## **5 Talks**

- Presentations: ICONIP 2001, 2004; ICAPR 2005; ICANN 2005; OMD2 meetings (Paris 2011, 2012).
- Posters: SCIA 2005; IJCNN 2005; ECML 2005; ICCV 2007; ACCV 2007.
- Invited talk at the DIKU group, the University of Copenhagen, 2008.

## **6 Awards**

01.09.1999-	Nokia scholarship (Natalia Kantola, Robertas Tamulevičius).
01.06.2000	
01.01.2002-	ComMIT grant (postgraduate studies).
01.07.2006	
09.11.2005-	ICANN travel grant.
09.15.2005	
07.01.2006-	HUT scholarship.
12.01.2006	
01.22.2008-	Travel grant (Prof. Mads Nielsen).
01.24.2008	
04.03.2008:	Doctoral thesis award: "Pass with Distinction".

## **7 Recommendation Letters**

- Prof. Erkki Oja, Konemiehentie 2, P.O. Box 5400, 02015 HUT, Finland.  
Email: Erkki.Oja@hut.fi, phone: +358-9-451 3265, fax: +358 9 451 3277.
- Doc. Jorma Laaksonen, Konemiehentie 2, P.O. Box 5400, 02015 HUT, Finland.  
Email: Jorma.Laaksonen@hut.fi, phone: +358-9-451 3269, fax: +358 9 451 3277.
- Prof. Dario Ringach, Dep. of Neurobiology, UCLA, Los Angeles, CA 90095-1563.  
Email: dario@ucla.edu, phone: +310 825 6606.
- Doc. Rodolphe Le Riche, DEMO, 158 cours Fauriel, 42023 Saint-Étienne, CEDEX 2.  
Email: leriche@emse.fr, phone: +336 31 262 678.
- Prof. Michael M. Bronstein, SI-109, Via Giuseppe Buffi 13, 6904, Lugano, Switzerland.  
Email: michael.bronstein@usi.ch, phone: +41 58 666 4120.
- Saulius Rakauskas (senior electronics engineer at Infovega UAB, retired). Antakalnio 48-16, LT-10304, Vilnius, Lietuva.  
Email: radiomtx@gmail.com, phone: +370 652 42317.
- Bronius Grigas (the founder of Mituvėlė UAB). Rodūnios kl. 11, LT-02189, Vilniaus m. sav., Lietuva.  
Email: bronius@mituvele.lt, phone: +370 686 43642.

## **8 Additional Information**

Date of Birth: 30.12.1977 (Gen X, He/Him).  
Citizenship: Lithuanian (Lithuania, European Union).  
Languages: English (7/10), Russian (8/10), Lithuanian (9/10).  
Driver's Licence: B.  
Sports: 2318 (hyperboloid777 @ lichess), Kyokushin 2nd belt (1993).  
Erdős Number: 5 (Bollobas, Mannila, Bingham, Oja), 4 (Odlyzko, Guibas, Bronstein).  
Hobbies: Classical and modern cinema.