#### **CURRICULUM VITAE**

#### **Personal Information**



Name: Guoying Zhao

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Google Scholar: <a href="http://scholar.google.fi/citations?user=hzywrFMAAAAJ">http://scholar.google.fi/citations?user=hzywrFMAAAAJ</a>

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Top H-index scientists for Computer Science and Electronics in Finland:

http://www.guide2research.com/scientists/FI

Current residence: Oulu, Finland

Postal Address: Center for Machine Vision and Signal Analysis,

P.O.Box 4500 FI-90014 University of Oulu, Finland

# **Education and degrees awarded**

2002.9-2005.6, Key Laboratory of Intelligent Information Processing, Institute of Computing Technology (ICT), Chinese Academy of Sciences, Beijing, China. (Date of Ph. D. degree: July 30, 2005)

- ♦ Dissertation: Video-based Gait Recognition. Supervisor: Prof. Hua Li
- ♦ Honor of outstanding doctoral dissertation of Institute of Computing Technology, Chinese Academy of Sciences, 2005

# 1999.9-2002.6, CAD Center, North China University of Technology, Beijing, China.

- ♦ Master in Computer Science and Technology.
- ♦ Thesis: The Generation Technology and Application of Stereoscopic Dynamic Images
- ♦ Supervisor: Prof. Xinyuan Huang, Director of School Of Animation in Communication University of China
- ♦ Honor of outstanding master thesis of North China University of Technology, 2002.

#### **Current position**

- **♦** 2021.09 **Academy Professor**.
- ♦ 2017.12 present, **Full professor** (**Tenured**), University of Oulu.
- ♦ Since Sep. 2010, **Docent** (adjunct professor) in "Computer vision, especially dynamic texture and motion analysis" of the Faculty of Technology, **University of Oulu**.

# Previous work experience

- ♦ 2014.01 2017.11, Associate Professor (Tenure track), University of Oulu
- ♦ 2011.09 2017.01, Academy research fellow of the Academy of Finland.
- ♦ 2016.10 2021.10, **Visiting Professor**, Northwest University, China
- ♦ 2016.06 2016.08, **Nokia Visiting Professor**, Rotgers Unibersity, US
- ♦ 2013.07 2013.09, **Visiting Research Fellow**, Imperial College London, UK
- ♦ 2008.01 2011.05, **Academy postdoctoral researcher** of the Academy of Finland.
- → 2005.7-2007.12, Senior Researcher (Senior Assistant, full time), Dr. Tech.: Machine Vision Group, Department of Electrical and Information Engineering, University of Oulu, Finland.
- ♦ 2002.9-2005.6, Research Assistant (full time), PhD candidate: Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, Chinese Academy of Sciences.
- ♦ 1999.9-2002.6, Research Assistant (full time): CAD Center, North China University of Technology.
- ♦ Career breaks:
  - Aug. 19 Dec. 20, 2008, Maternity leave; Dec. 1, 2011 Apr. 4, 2012, Maternity leave.

### Research funding and grants (Totalling 10.3+ Millon Euros)

- **♦** 2022.01-2025.12: INFOTECH project: **Towards Secure and Reliable Deep Learning Systems against Adversarial Attacks**. 336 000 €.

- ♦ 2018.09.01-2022.08.31: **Academy project** "Micro-gesture analysis with machine learning for hidden emotion understanding (MiGA)": 857 145 €. Overall success rate: 15%.
- 2018.05.01-2022.12.31: Strand Co-Leader for Academy Flagship project "6G Enabled Wireless Smart Society & Ecosystem (6Genesis)": 9 166 700 €.
- ♦ 2018.09.01-2022.08.31: **Spearhead projects** "Towards Reading Micro-Expressions in the Real World", University of Oulu: 440 000 €.
- ♦ 2018.01.01-2019.12.31: **Academy ICT 2023 project**: Separable Modality Learning: 438 500€.
- 2018.01.01-2019.12.31: Business Finland funded project: Quantifying Human Experience for Increased Intelligence Within Work Teams and in the Customer Interface. Total appropriation: 318 756€.
- 2016.10.01-2018.09.30: Academy Key Project: Cardiac beat to beat variability analysis from remote videos for health service (CAVA). Total appropriation: 300 000€. Overall success rate: 17%.
- ♦ 2014.09.01-2018.08.31: **Academy project funding** from Academy of Finland for researching "Computer Vision for Continuous Emotional State Analysis (CV4Emo)": 858 607€. Overall success rate: 16%.
- **Tenure-track Associate Professor**: 2014.01-2017.01: 111 000 €
- ◆ 2011.09.01-2017.01.31: Academy fellow position funding from Academy of Finland for researching Computer vision methods for analyzing human communicative behavior. Total appropriation: 891 061 €. Overall success rate: 13%.
- ♦ 2011-2015: Senior Research Fellow Start-up Package from University of Oulu and Center for Machine Vision Research: 750 000 €.
- ♦ 2014.01-2015.06: **Infrastructure funding**: "Test databases and computing devices for machine vision research", 110 160 €.
- ♦ 2008.01.01-2011.05.31: Postdoctoral position funding from Academy of Finland for researching Video-based event analysis and person identification. Total appropriation 189 000 €.
- ♦ 2016.01-2018.12: Hongkong Research Grants Council for researching Face anti-spoofing to combat mask attacks: A remote photoplethysmography approach (HKD 680K, Co-PI. PI: Prof. Pong-chi Yuen from Hongkong Baptist University)
- ♦ 2020.07: Learning oriented multi-modal data analysis and application study from Sino-Finnish Learning and Innovation Institute (150 000 RMB, Co-PI).
- ♦ 2016, made an ERC Consolidator grant application, got into the second round and final score: A (fundable, top 15% out of over 2300 applications).

#### Leadership and supervision experience

### Postdoctoral researchers:

Dr. Mohammad Sabokrou: 2018.06-08; 2021.07-12 (Now Associate Professor of IPM); Dr. Qianru Xu: 2021-present; Dr. Hanlin Mo:2021-present; Dr. Kevin Homan Cheng: 2020-present; Dr. Xin Liu: 2019-2020 (Associate Professor of Lappeenranta-Lahti University of Technology, Finland; Academy of Finland postdococtoral researcher); Dr. Xiaobai Li: 2017-2020 (Assistant Professor of University of Oulu; Academy of Finland postdococtoral researcher); Dr. Quang Nhat Vo: 2018-2020 (AI scientist in Silo.AI); Dr. Jingang Shi: 2017-2020 (Assoc. Prof. of Xi'an Jiaotong University); Dr. Xiaohua Huang: 2015-2019 (Professor of Nanjing Institute of Technology); Dr. Xiaopeng Hong: 2011-2019 (Professor of Xi'an Jiaotong University); Dr. Mohammad Ghahramani: 2012-2013; Dr. Vili Kellokumpu: 2013-2017 (Scientist of VTT).

#### **PhD dissertations:**

Vili Kellokumpu: 2006-2011 (Advisor); Yimo Guo: 2008-2013 (Co-supervisor); Xiaohua Huang: 2009-2014 (Co-supervisor); Xiaobai Li: 2010-2017 (Co-supervisor); Xin Liu: 2014-2019 (Main Supervisor); Yingyue Xu: 2015-2020 (Main Supervisor); Khanh Tran-Thuong: 2016-present (Main Supervisor); Henglin Shi: 2017-present (Main Supervisor); Haoyu Chen: 2017-present (Main Supervisor); Yante Li, 2017-present (Main Supervisor); Wei Peng, 2018-present (Main Supervisor); Muzammil Behzad: 2018-present (Main Supervisor); Zitong Yu,

2018-present (Main Supervisor); Abdelrahman Mostafa: 2020-present (Main Supervisor); Tuomas Varanka: 2020- present (Main Supervisor); Atif Shah: 2020- present (Main Supervisor); Marco Savic (2021-present); Hui Zhang (2022-present).

Master thesis (30+): Tuomas Varanka, Hao Ban, Hamza Zair, Radouane Kaddari, Bofan Lin, Jiawei Zhang, Haoyu Chen, Niloufar Zebarjadi, Yingyue Xu, Qiuhai He, Yan Zhai, Matti Taini, etc.

**Follow-up group chair** for Ph. D students: Mr. Snehal Bhayani, Mr. Hietaniemi Riku, Ms. Iryna Savelieva, Mr. Saad Ullah Akram and Pratyush Pandab

Follow-up group member for Ph. D students: Mr. Jukka Komulainen, Ms. Anu Pramila

Currenlty, from whom I have supervised, there are two Professors, four Associate professors, one Assistant professor, two Academy of Finland postdoc grant recipients, and many in international (e.g., Google, Siemens, Alibaba) and national companies (e.g., Silo.AI, Bittium Oyj, Visidon, Valossa).

My students and researchers are frequent recipients of very prestigious and highly competitive fellowships, such as:

- ♦ Academy of Finland Postdoc position
- ♦ Nokia Scholarship
- ♦ Endeavour Research Fellowship
- → Tauno Tönning Research funding
- ♦ Finnish Cultural foundation grant
- ♦ Kauta Foundation grant
- ♦ Jorma Ollila grant
- ♦ Tekniikan Edistamissaatio grant
- ♦ Otto A. Malm Foundation grant
- ♦ Tekniikan edistämissäätiö postdoc grant

# **Teaching experience**

- ♦ Lecturer for 521285S Affective Computing (5 ECTS), University of Oulu, 2014 present.
- ♦ Lecturer for 521493S/521140S Computer Graphics (5 ECTS), University of Oulu, 2010 present.
- → FG 2018 tutorial: Guoying Zhao and Matti Pietikäinen: Reading hidden emotions from micro-expression analysis. May 15, 2018, Xi'an, China.
- ♦ SCIA 2013 tutorial, June 17, 2013 Helsinki, Finland.
- ♦ ICCV 2009 tutorial, 27th, Sep. 2009, Kyoto, Japan.
- ♦ ICPR 2006 Tutorials: Aug. 20-24, 2006, Hongkong
- ♦ Completed 15-credit University Pedagogy studies in 2019.
- **♦ Keynote talks** in:
- Huawei Summit, Nov. 4, 2021.
- ICCV "Face Anti-Spoofing Workshop and Challenge", Oct. 11, 2021.
- ICPR Workshop on "facial and body expressions, micro-expressions and behavior recognition", Jan. 10, 2021.
- Invited talk "Towards emotion AI and applications in Education" in 5th Virtual Conference of Sino-Finnish Joint Learning Innovation Institute. Nov. 25, 2020.
- 9th International Conference on Computing and Pattern Recognition (ICCPR 2020), Oct. 31, 2020
- IPM-AI Summer School 2020 (Aug. 22-26, 2020, <a href="http://cs.ipm.ac.ir/asoc2020/">http://cs.ipm.ac.ir/asoc2020/</a>).
- 12th International Confernce on Bioinformatics and Biomedical Technology (ICBBT 2020), May 17, 2020.
- 3rd International Conference on Biometric Engineering and Applications (ICBEA 2019), May 30, 2019.
- 6th International Workshop on Context Based Affect Recognition (CBAR 2019) in conjunction with FG2019, May 14, 2019.
- International symposium on frontier technologies and medical imaging analysis, June 28, 2018, Central South University.
- First Workshop on Large-scale Emotion Recognition and Analysis in conjunction with FG2018, May 19, 2018
- Facial Micro-Expression Grand Challenge (MEGC): Methods and Datasets in conjunction with FG2018, May 15, 2018.
- SIG 27 Conference, Nov. 29, 2016

• ACCV workshop on Computer Vision for Affective Computing (CV4AC), Nov. 1, 2014

### **Experience of organising scientific meetings**

- ♦ <u>General chair</u> of 3rd International Conference on Biometric Engineering and Applications (ICBEA 2019), Stockholm, Sweden, 2019; 4th International Conference on Biometric Engineering and Applications (ICBEA 2020), Xi'an, China.
- **♦ Special Sessions/Panels Chairs for FG 2023.**
- ♦ **Co-Program chair of** ACM International Conference on Multimodal Interaction 2021 (ICMI).
- ★ <u>Late Breaking Results Co-Chairs</u> of 21st ACM International Conference on Multimodal Interaction (ICMI 2019)
- **♦** Co-publicity chair of Conference on Automatic Face and Gesture Recognition (FG 2018).
- **♦** Co-organizer of Finnish DENIS summer school on Affective Computing (2016).

### **♦** Co-chair of special sessions:

(with X. Fu and M. Pietikäinen) Organization chair of special session "Expression and Micro-Expression Analysis: From Psychology to Computer Vision" for IEEE International Conference on Automatic Face and Gesture Recognition 2013 (FG'13)

(with Z. Zhou and S. Zafeiriou) Organization chair of special session "Analysis of mouth motion for speech recognition and speaker verification" for IEEE International Conference on Automatic Face and Gesture Recognition 2015 (FG'15)

- ♦ Advisory panel: for international workshop on "Facial Micro-Expression Grand Challenge (MEGC): Methods and Datasets" with FG 2018, FG 2019 and FG 2020.
- ♦ **Mentor:** for FG 2013 Doctoral Consortium

#### Patents, inventions, awards and honours

- **♦** IEEE Fellow (for contributions to facial expression analysis and feature representation), 2022-.
- ♦ Year the University Research award for success in research, 2021
- → Fellow of Asia-Pacific Artificial Intelligence Association (AAIA), 2021-.
- ♦ IAPR Fellow, 2020 (For contributions to video analysis and affective computing).
- ♦ Selected to one of ten prestigious Academy Professor posts for 2021-2026 (In total 10 Academy professors in Finland covering all disciplines).
- ♦ "Zhao G., Huang X., Taini M., Li S.Z., Pietikainen M. Facial expression recognition from near-infrared videos. Image and Vision Computing, 29(9): 607-619, 2011." Top 10 cited articles in IVC until 2021.
- ♦ Person of the year in 2020 among Chinese Scholars and Students in Finland.
- ♦ IEEE Finland Section best student conference paper award 2020.
- ♦ First place on Chalearn multi-modal face anti-spoofing attack detection challenge @ CVPR 2020.
- ♦ Second place on Chalearn single-modal face anti-spoofing attack detection challenge @ CVPR 2020.
- ♦ 2nd Place Scheme on Action Recognition Track of ECCV 2020 VIPriors Challenges (88.31%).
- ♦ 10 leading Chinese talents on scicence and technology in Europe 2018.
- ★ Excellent PhD graduated within 15 years from the Institute of Computing Technology of Chinese Academy of Sciences, 2016, 2020.
- ♦ Selected to reserve list in ERC 2014 starting grant and ERC 2016 consolidator grant.

- → Finland's most publishing researcher on AI in 2015-16 (Digibarometri 2017 report).
- ♦ Nokia Foundation Visiting Professor Award, 2016
- ♦ NVIDIA hardware grant, 2015
- ♦ Most remembered poster with ICCV 2011 for the work "Recognising Spontaneous Facial Micro-expressions. T. Pfister, X. Li, G. Zhao and M. Pietikäinen"
- ♦ Award of Academy research fellowship from Academy of Finland, 2011
- ♦ Award of postdoc project from Academy of Finland, 2008
- → Honor of outstanding doctoral dissertation "Video-based Gait Recognition" of Institute of Computing Technology, Chinese Academy of Sciences, 2005
- ♦ Honor of outstanding master thesis "The Generation Technology and Application of Stereoscopic Dynamic Images" of North China University of Technology, 2002.
- ♦ Award of most outstanding organizer of graduate union activity of North China University of Technology, 2002.

### **♦** Patents:

- 1) T. Pfister, M. Pietikäinen, X. Li and **G. Zhao**, Automated recognition algorithm for detecting facial expressions, US patent US 8848068 B2. Priority date: 2012-May-08; Publication date: 2014-Sep-30.
- 2) PC Yuan, S. Liu, S. Zhang and **G. Zhao**, 3D Mask Face Anti-spoofing with Remote Photoplethysmography. US patent US10380444B2. Priority date: 2017-July-14; Publication date: 2019-Aug-13.
- 3) Jinye Peng, Guifeng Li, Jingang Shi, **Guoying Zhao**, Zhan Li and Jun Wang. A method for micro-expression recognition under low-resolution. Application num: 201910128712.4. Pending.
- 4) Zhan Li, Kaikai Wang, Baosheng Xu, **Guoying Zhao**, Jun Wang, Chao Wen, Bin Li & Jinye Peng. Label recommendation model construction method and system based on self-attention and collaborative attention mechanism. Application num: 202010153562.5. Pending.
- 5) Zhan Li, Baosheng Xu, Kaikai Wang, Xiaojie Tian, **Guoying Zhao**, Yongqin Zhang, Jun Wang, Bin Li, Xi Yang & Jinye Peng. Multi-modal label recommendation model construction method and system based on multi-level attention mechanism. Application num: 202010152922.X. Pending
- 6) **Guoying Zhao**, Tingting Wu, Zhan Li, Qingchen Fan, Yuheng Liu, Hai Zhang, Jinye Peng, Chao Wen, Yongin Zhang & Xi Yang. A three-dimensional convolutional micro-expression recognition algorithm based on attention mechanism. Application num: 202010847866.1. Pending.
- 7) Mingnan Le, Jianbo Li, Wei Zhang, Bin Li, **Guoying Zhao**, Jinye Peng, Yongqin Zhang, Wanqing Zhao, Jun Wang. The model building, methods and device of object identification based on computational ghost imaging. Application num: 202010344210.8. Pending.

#### Other key scientific or academic merits

- ♦ Pre-examiner and opponent of doctoral dissertations: 15+ PhD theses for students from China, Finland, Sweden, France, UK, Singapore, Malaysia and Parkistan.
- **External Promotions Assessor:** Professor promotion in Manchester Metropolitan University, UK, 2021; Associate promotion in Shenzhen University, China, 2021.
- **Evaluation committee for faculty recruitment: University of Barcelona (2019)**
- ♦ Chair of review group for docentship application: University of Oulu, 2014, 2015
- **♦** Guest editor of nine special issues:
  - (with B. Chen, S. Tan, G. Coatrieux) Security and Communication Networks: Special issue on Data-Driven Face Forensics and Security, 2020-2021
  - (with X. Huang, M. Pietikäinen, W. Zheng, A. Dhall) Image and vision computing: special issue on Automatic face analytics for human behavior understanding, 2018-2019
  - (with M. Pietikäinen, L. Liu, J. Chen, X. Wang and R. Chellappa) IEEE Trans. on Pattern Analysis and Machine Intelligence: Special Issue on Compact and Efficient Feature Representation and Learning in Computer Vision, 2017-2018
  - (with X. Shen, W. Chen) Frontiers in Psychology: Special issue on Recognizing Microexpression: An

Interdisciplinary Perspective, 2016-2017

(with S. Zafeiriou, I. Kotsia, M. Nicolaou, J. Cohn) IEEE Transactions on Affective Computing: Special Issue on Human Behavior Analysis "in-the-wild", 2016-2017

(with S. Zafeiriou, I. Kotsia, M. Pietikäinen, J. Cohn and R. Chellappa) Special issue on Spontaneous Facial Behaviour Analysis (SFBA) for Computer Vision and Image Understanding, 2014-2015.

(with J. Chen, Z. Lei, L. Liu, M. Pietikäinen) Speical Issue on robust local descriptors for computer vision, Neurocomputing 2014-2015.

(with M. Pietikäinen, M. Turk, L. Wang, L. Cheng) Special Issue on Machine Learning in Motion Analysis, Image and Vision Computing, 2011-2012.

(with L. Wang, N. Rajpoot, M. Nixon) Special issue on New Advances in Video-based Gait Analysis and Applications: Challenges and Solutions, IEEE Transactions on Systems, Man, and Cybernetics—Part B: Cybernetics, 2009-2010.

- ♦ **Director** of UOulu AI community (1.12.2018-).
- ♦ Vice-cooridinator of special interest group on computer vision, Finnish center of artificial intelligence (02.2020-)
- ♦ Board member of Finnish AI society (FAIS, 2019-2021); of Scientific Board of Chinese Association of Science and Technology in Finland (CASTF); of Center for Machine Vision Research, University of Oulu, Finland, 2010-present.
- ♦ Scientific Advisors: Finnish Business Angels Network FiBAN; Webuust Oy.
- ♦ Participated in Leadership training (UniLead program) at University of Oulu: 2019
- ♦ Member of program committees: ICCV, CVPR, FG, BMVC, ICPR, CRV, AVSS, etc.
- ♦ Book editor and author

Editor of Springer book: Machine Learning for Vision-based Motion Analysis, 2009;

Editor of IGI global book: Machine Learning for Human Motion Analysis: Theory and Practice, 2009;

Author of Springer book: Computer Vision Using Local Binary Patterns. Springer, 2011.

### Scientific and societal impact of research

**Publications**: 1 book, 2 edited books, 4 book chapters, and over 270 journal and conference papers.

**Citations**: In Google Scholar, her h-index is 64, i10-index 165, and number of citations over 17740+ (until Jan. 2022). Most cited paper: Zhao & Pietikäinen (PAMI 2007): 2854+ citations

### Memberships and positions of trust in scientific societies

- **♦ 2022-, IEEE Fellow.**
- **♦ 2020-, Fellow of IAPR (International Association for Pattern Recognition).**
- **♦ 2021-, Fellow of Asia-Pacific Artificial Intelligence Association (AAIA).**
- **♦** 2020-present, member of AAAC (The Association for the Advancement of Affective Computing).
- **♦ 2020-present, member of ELLIS (European Laboratory for Learning and Intelligent Systems) society.**
- ★ Editorial Board Member: Pattern Recognition Journal (JUFO 3, 2016-); IEEE Transactions on Circuits and Systems for Video Technology (JUFO 2, 2018.01-2021.12); Image and Vision Computing Journal (JUFO 2, 2015-); Frontiers in Psychology (JUFO 1, 2020-); Journal of Electronic Imaging (JUFO 1, 2017-2019).

#### **Research work in Press**

Research work about facial expression recognition was reported on YLE TV1 Prisma in Feb. 7th, 2007

Research work about lipreading was reported on YLE TV2 Northern Finland News in Aug. 16th, 2007.

Research work about micro-expression was reported on YLE TV1 Prisma Studio in Sep. 15th, 2011.

Research work about visual speech analysis reported on Finnish Newspaper Kaleva in Mar. 10, 2015.

Work on reading hidden emotions from spontaneous microexpressions has been reported by MIT Technology Review (http://www.technologyreview.com/view/543501/machine-vision-algorithm-learns-to-recognize-hidden-facial-expressions/), Nov. 2015.

Work on micro-expression was reported by Savon Sanomat (http://www.savonsanomat.fi/kotimaa/Kone-n%C3%A4kee-ihmisen-salaiset-tunteet-%E2%80%93-toistaiseksi-vain-tutkijankammiossa/1055617), Kaleva and other medias, Oct. 2017.

"Tekoälyltä odotetaan myös tunne taitoja" published in the webpage of Academy of Finland https://www.aka.fi/fi/akatemia/media/Ajankohtaiset-uutiset/2018/tekoalylta-odotetaan-myos-tunnetaitoja/. Jan. 2018.

Academy professor position reported by Tekniikka&Talous, Oct. 2021.

# Most important visits abroad

- ♦ Prof. Jeffrey Cohn's group in University of Pittsburgh and CMU, USA, from Mid. June for two weeks, 2016
- ♦ Prof. Dimitris Metaxas' group in Rutgers, The State University of New Jersey, USA, Jun. Aug. 2016
- ♦ Prof. Maja Pantic's IBUG group in Imperial College London, UK, July 12 Sep. 28, 2013
- ♦ Prof. Mark Nixon's ISIS group in Southampton University, UK, July 11 22, 2011.
- ♦ Prof. Stan Z. Li's group in Institute of Automation, Chinese Academy of Sciences, Apr. 6 19, 2009