

# CURRICULUM VITAE

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## 1. EDUCATIONAL BACKGROUND:

- 1996 – 1999: **Doctor of Engineering (Electronic and Information Engineering):**

Graduate School of Engineering,

Toyohashi University of Technology, Japan.

Thesis title: “Text-Independent Speaker Recognition based on Frame Level Likelihood Transformations”.

Dissertation supervisor: Prof. Seiichi Nakagawa.

- 1994 – 1996: **Master of Engineering (Information and Computer Sciences):**

Graduate School of Engineering,

Toyohashi University of Technology, Japan.

- 1978 – 1984: **System Engineer:**

Department of Technical Cybernetics,

St. Petersburg State Polytechnic University, St. Petersburg, Russia.

Five and half years course. Diploma with honors.

## 2. EMPLOYMENT:

- 2009 – Present: **Associate Professor,**

Human Interface Laboratory, Graduate School of Computer Science and Engineering, The University of Aizu.

- 2004 – 2009: **Senior Research Scientist,**

Department of Acoustics and Speech Research, Spoken Language Communication Research Lab., Advanced Telecommunications Research Institute, Kyoto, Japan.

- 2002 – 2004: **Senior Researcher,**

Department 1, Spoken Language Translation Research Lab., Advanced Telecommunications Research Institute, Kyoto, Japan.

- 2000 – 2002: **Invited Researcher**,  
Department 1, Spoken Language Translation Research Lab., Advanced Telecommunications Research Institute, Kyoto, Japan.
- 1999 – 2000: **Invited Researcher**,  
Research and Development Center, Advanced Telecommunications Research Institute, Kyoto, Japan.
- 1988 – 1993: **Research Associate**,  
Telephone Terminals Department, Institute of Communications Industry, Sofia, Bulgaria.
- 1984 – 1988: **Research Engineer**,  
Telephone Terminals Department, Institute of Communications Industry, Sofia, Bulgaria.

### 3. VISITING POSITIONS:

- 2008: **Visiting Professor**,  
Parole group, INRIA-LORIA, Nancy, France.

### 4. AWARDS:

- **The Acoustical Society of Japan Technology Advancement Award** for “Development of Corpus based Speech-To-Speech Translation System for Mobile Phone Networks” (with others), May 2008.
- **The Asia-Pacific Association for Machine Translation Nagao Award** for “Research and Development on Example-based Statistical Machine Translation using Corpora, and the Commercialization of Multilingual Speech Translation System with Mobile Phones” (with others), June 2007.
- **The Telecommunication Advancement Foundation of Japan Telecom System Technology Award** for the paper “The ATR Multilingual Speech-to-Speech Translation System” (with others), March 2007.
- **The Electronics, Information and Communication Engineers Best Student Paper Award** for the paper “Text-Independent Speaker Identification Utilizing Likelihood Normalization Technique”, March 1998.

### 5. RESEARCH INTERESTS:

- Speech recognition, synthesis and understanding.
- Speaker and language recognition.
- Multimedia signal analysis and processing.
- Noise robustness and estimation.
- Spoken dialog processing.
- Bayesian Networks.
- Artificial Neural Networks.

- Statistical pattern recognition and machine learning.
- Human-machine interface and interaction.
- Neuro-biologically inspired architectures, algorithms, etc.

## 6. RESEARCH EXPERIENCE:

- 2006 – 2009: **ATR project “Multilingual speech processing”:**
  - Started new research on bio-inspired Never-Ending Learning (NEL) based algorithms and intelligent systems for speech processing. Developed and proposed the Dynamic Hidden Markov Network (DHMnet), a network for speech modeling and an on-line speaker diarization system, both based on the NEL principle. Worked on unified (for both recognition and synthesis) hierarchical speech system based on the DHMnet and cognitive information processing principles.
- 2000 – 2006: **ATR project “Large corpus based speech translation technology”:**
  - Generalized the proposed hybrid modeling approach into a general framework for incorporating knowledge sources into data driven, statistical models for speech recognition.
  - Investigated probability density factorization approaches and developed the hybrid Hidden Markov Model / Bayesian Network (HMM/BN) speech modeling method. Experimented with various applications of the HMM/BN model.
  - Researched acoustic modeling techniques and system design approaches for noise robustness for the SPINE and SPINE2 DARPA evaluations.
- 1999 – 2000: **ATR project “Computer assisted language learning”:**
  - Worked on the speech recognition part of the ATR interactive English language learning system.
- 1996 – 1999: **Doctor course research:**
  - Researched speaker and language recognition methods using frame level likelihood transformations including new Weighted Models Rank (WMR) method and developed the Maximum Normalized Likelihood (MNL) discriminative training algorithm.
- 1994 – 1996: **Master course research:**
  - Worked on speaker recognition with various likelihood normalization techniques.

## 7. DEVELOPMENT EXPERIENCE:

- 2000 – 2009: In charge of the development and evaluation of the ATR English speech recognition system. Supervised as well as took part in the training of the acoustic and language models (data collection, data preprocessing, model training and tuning, and evaluation),

- pronunciation vocabulary development, and research results implementation into software.
- 1999 – 2000: Took part in the development of the ATR computer assisted language learning (CALL) system based on the PBMEC speech recognition system.
  - 1998 – 1999: Developed on-line real-time open set speaker recognition demonstration system.

## **8. TEACHING EXPERIENCE:**

- 2009 – Present: Lecturer, The University of Aizu. Courses taught: “Operating systems”, “C++ Programming”, “Introduction to Speech Recognition”.
- 2002 – 2005: Part-time lecturer, course “Advanced speech recognition technologies”, Technology development center, Toyohashi University of Technology, Japan.

## **9. STUDENT SUPERVISION EXPERIENCE:**

- 2009 – Present: Daria Vazhenina, Master student, The University of Aizu, Japan.
- 2004 – 2007: Sakriani Sakti, Doctor student, University of Ulm, Germany.
- 2003 – 2004: Mark Chauvet, Master student, Institute National Polytechnique de Grenoble, France.
- 2002 – 2003: Etienne Denoual, Master student, Institute National Polytechnique de Grenoble, France.
- 2001 – 2002: Keisuke Iizuka, Master student, Japan Advanced Institute of Science and Technology, Japan.
- 2000 – 2001: Yan Lane, Master student, Kyoto University, Japan.  
Miho Ohyama, Doctor student, Waseda University, Japan.

## **10. LEADERSHIP EXPERIENCE:**

- 2006 - 2007: Leader of the ATR working group for the TC-STAR “European Parliament Plenary Speeches Automatic Speech Recognition” evaluation.
- 2001 – 2007: Organizer of scientific discussion seminars and regular research talks – the main educational activities in the department.
- 2001 - 2002: Leader of the ATR working group for the DARPA “Speech in noisy Environments (SPINE) 2” evaluation.
- 2000 - 2001: Leader of the ATR working group for the DARPA “Speech in noisy Environments (SPINE)” evaluation.

## **11. PROFESSIONAL ACTIVITIES:**

- 2000 – Present: Reviewer of the following journals:
  - IEEE Transactions on ASLP.
  - Speech Communication.
  - Pattern Recognition Letters.
  - IEICE Transactions on Inf. and Systems.
  - EURASIP Journal on Audio, Speech and Music Processing.

## **12. MEMBERSHIPS OF PROFESSIONAL SOCIETIES:**

- IEEE, Signal Processing Society.
- Institute of Electronics, Information and Communication Engineers (IEICE).
- International Speech Communication Association (ISCA).
- Acoustical Society Japan (ASJ).

## **13. LANGUAGES:**

- English (fluent).
- Bulgarian (fluent).
- Russian (fluent).
- Japanese (advanced).
- French (beginner).

## **14. PROGRAMMING SKILLS:**

- Operating systems: Linux, Unix, Windows.
- Languages: Python, Perl, C/C++, Shell.
- Software tools: HTK, Julius, Matlab.

## **15. PUBLICATIONS:**

- Books: 1
- Peer-reviewed journal papers: 13
- Peer-reviewed paper presentations at international conferences: 40
- Other paper presentations: 28

## **16. PATENTS:**

- Pending: 8
- Registered: 3