

# Philip Tovstogan

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## Education

- **Doctor of Philosophy (in-progress 2018-2021)**  
Audio Signal Processing Lab, Music Technology Group as part of MIP-Frontiers training network  
Universitat Pompeu Fabra, Barcelona, Spain  
Supervisors: Xavier Serra, Dmitry Bogdanov  
Thesis: **Exploration of music collections with audio embeddings**  
Research, development and evaluation of visual music exploration systems using deep learning music autotaggers (genre, mood, themes).
- **Master of Science (2017-2018)**, Grade: 9.0/10.0  
Master in Sound and Music Computing, Music Technology Group  
Universitat Pompeu Fabra, Barcelona, Spain  
Supervisors: Dmitry Bogdanov, Alastair Porter  
Thesis: **Exploring Music Similarity with AcousticBrainz**  
Implementation, evaluation and improvement of existing state-of-the art music similarity algorithms in the context of AcousticBrainz.
- **Master of Science (2012-2015)**, GP: 4.1  
Electrical Engineering and Computer Science International Graduate Program  
National Chiao Tung University, Hsinchu, Taiwan  
Supervisor: Hsu-Feng Hsiao  
Thesis: **Optimization of Video Streaming Using Video Quality Estimation and LMRC Channel Coding**  
Optimization of Layer-aligned Multi-priority rateless codes (LMRC) for H.265 video streaming over mobile networks.  
Development of probabilistic model to gauge impact of channel conditions on frame loss patterns.
- **Bachelor of Science (2008-2012)**, GP: 4.09  
Department of Computer Science, Multimedia & Network Engineering Program  
National Chiao Tung University, Hsinchu, Taiwan  
Supervisor: Chun-Jen Tsai  
Thesis: **Design and Implementation of Perceptual Audio Coding Models**  
Survey of different MP3 codecs (LAME, Fraunhofer, GoGo, Apple) and analysis of perceptual audio quality degradations for different genres. Proposal of MP3 codec that leverages genre-specific audio characteristics to tune its psychoacoustic model.

## Conference publications

- **Web Interface for Exploration of Latent and Tag Spaces in Music Auto-Tagging**  
Tovstogan P., Serra X., and Bogdanov D.  
*Machine Learning for Media Discovery Workshop (ML4MD), International Conference on Machine Learning (ICML), Vienna, Austria, 2020*
- **Da-TACOS: A Dataset for Cover Song Identification and Understanding**  
Yesiler F., Tralie C., Correya A., Silva D. F., Tovstogan P., Gómez E., and Serra X.  
*In 20th International Society for Music Information Retrieval Conference (ISMIR), Delft, The Netherlands, 2019*

- **The MTG-Jamendo Dataset for Automatic Music Tagging**  
Bogdanov, D., Won M., Tovstogan P., Porter A., and Serra X.  
*Machine Learning for Music Discovery Workshop (ML4MD), International Conference on Machine Learning (ICML), Long Beach, CA, United States, 2019*
- **Video Streaming Optimization Using Degradation Estimation with Unequal Error Protection**  
Tovstogan P., and Hsiao H. F.  
*IEEE International Symposium on Circuits and Systems (ISCAS), Baltimore, MD*
- **Cross-Layer Unequal Error Protection for Video Streaming over Wireless Broadband Networks**  
Tovstogan P., Tseng K. J., and Hsiao H. F.  
*Asia-Pacific Radio Science Conference (AP-RASC), Taipei, Taiwan, 2014*

## Awards and Honors

- Best Project for Music Streaming Services from HAMR@ISMIR2018 (September 2018)
- Marie Skłodowska-Curie Fellowship as part of the MIP-Frontiers training network (2018 - 2021)
- Silver Bamboo Scholarship (Fall 2008 - Spring 2009)
- Golden Bamboo Scholarship (Fall 2009 - Spring 2012, Spring 2013 - Fall 2013)
- Outstanding New Student Scholarship (Fall 2012)
- Academic Achievement Award (Spring 2009, Fall 2009, Spring 2011, Fall 2012)

## Work experience

- **Predoctoral Researcher** (09/2018 - present)  
Music Technology Group, Universitat Pompeu Fabra, Barcelona, Spain
  - Research and development of interactive music exploration system
  - AcousticBrainz.org: support of new features relevant to the research
- **Software Developer** (01/2018 - 08/2018)  
Universitat Pompeu Fabra & Phonos Foundation, Barcelona, Spain
  - Freesound.org: bugfixes and implementation of new features (Python, Django, PostgreSQL)
- **Software Developer** (05/2017 - 08/2017)  
LyraVR, Taipei, Taiwan
  - Cross-platform support implementation
  - Oculus Rift & Touch control integration
  - Backend cloud system design
- **R&D Engineer** (01/2016 - 04/2017)  
Bovia Co. Ltd., Zhubei, Taiwan
  - Development of integration layer between web UI and Linux system (Debian) in Python (flask-restful) for BoviCam embedded device (BeagleBone Black, Intel Edison).
  - Research and development of continuous integration (CI) firmware building system (linux server + embedded devices for testing on specific platforms)
  - Maintenance and development of new versions of mobile apps (iOS, Android) for cloud surveillance system: live stream caster from device to server, and player of multiple streams from server
  - System Administration (Google Cloud, Atlassian JIRA + Confluence + BitBucket, Amazon Web Services, GitLab)
- **Software Developer** (10/2014 - 01/2016)  
Information and Communications Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
  - Research and development of various projects based on BeagleBone Black embedded system (Java, JS, Python, PHP)
  - Corporate bicycle rental system maintenance (LAMP stack), architecture design and development of next version of system (MEAN stack)

- Architecture design and prototyping of video surveillance system for vehicles (big data optimizations, Apache Kafka, load balancing)
- **Research Assistant** (9/2012 - 6/2014)  
Network and Information Processing lab, National Chiao Tung University, Hsinchu, Taiwan
  - H.264/H.265 channel coding research and library implementation with dynamic perceptual quality optimization (MATLAB, C++)
- **Software Developer** (3/2011 - 2/2012)  
Changing Information Inc., Hsinchu, Taiwan  
Surveying and evaluating specifications and new technologies. Integration of one-time password provider device into various systems:
  - PEAP-MSCHAPv2 RADIUS authorization server for WiFi AP (Java)
  - MSCHAPv2 RADIUS authorization server for VPN access via MS Windows Server 2008 (Java)
  - Windows Logon Manager (C#)

## Language Proficiency

- Ukrainian - native
- Russian - native
- English - fluent
- Spanish - advanced
- Mandarin - intermediate

## Additional Education

- Massive Open Online Courses (coursera.org, kadenze.com), 2013 - present:
  - Physics-Based Sound Synthesis for Games and Interactive Systems - 93.2 (Stanford University)
  - Software Product Management Specialization - 100% (4/5 courses taken) (University of Alberta)
  - Machine Learning - 100% (Stanford University)
  - Audio Signal Processing for Music Applications - 97.9% (Stanford University, Universitat Pompeu Fabra of Barcelona)
  - Game Theory - 91.9% (Stanford University, University Of British Columbia)
  - Introduction to Digital Sound Design - 95.5% (Emory University)
  - Music Production - 99.3% (Berkeley College of Music)
- Primary and Secondary Music Education, Music School #37, Kyiv, Ukraine, 1996 - 2003
  - vocal, piano, solfeggio, music history, music theory, composition