

# Philip Tovstogan

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## Education:

- **Doctor of Philosophy** (2018-2021), Audio Signal Processing Lab, Music Technology Group  
Universitat Pompeu Fabra, Barcelona, Spain  
Supervisor: Xavier Serra
- **Master of Science** (2017-2018), 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*, GP: 4.3  
Optimization of Layer-aligned Multi-priority rateless codes (LMRC) for H.265 video streaming over mobile networks including cross-layer interactions with 4G (WiMAX) standards. Development of probabilistic model to gauge impact of channel conditions on frame loss patterns and thus quality degradation - primary metric for optimization.
- **Bachelor of Science** (2008-2012), GP: 4.09, Department of Computer Science, Multimedia & Network Engineering Program  
National Chiao Tung University, Hsinchu, Taiwan  
Project Supervisor: Chun-Jen Tsai  
Project: *Design and Implementation of Perceptual Audio Coding Models*, GP: 4.0  
Survey of different MP3 codecs (LAME, Fraunhofer, GoGo, Apple) and analysis of perceptual audio quality differences between same bitrate profiles constrained on music genre. Proposal of genre-aware codec for MP3 compression that leverages genre-specific temporal and spectrum audio characteristics to tune its psychoacoustic model.

## Conference publications:

- **Video Streaming Optimization Using Degradation Estimation with Unequal Error Protection**  
P. Tovstogan and H. F. Hsiao  
IEEE International Symposium on Circuits and Systems (ISCAS), Baltimore, MD, 2017  
DOI: 10.1109/ISCAS.2017.8050577
- **Cross-Layer Unequal Error Protection for Video Streaming over Wireless Broadband Networks**  
P. Tovstogan, K. J. Tseng and Hsiao H. F.  
Asia-Pacific Radio Science Conference, Taipei, Taiwan, 2013

## Awards and Honors

- NCTU Silver Bamboo Scholarship (Fall 2008 - Spring 2009)
- NCTU Golden Bamboo Scholarship (Fall 2009 - Spring 2012, Spring 2013 - Fall 2013)
- NCTU Outstanding New Student Scholarship (Fall 2012)
- NCTU Academic Achievement Award (Spring 2009, Fall 2009, Spring 2011, Fall 2012)

## Work experience

- **Software Developer** (01/2018 - present)  
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: *Taiwan Government Project on WiMAX Mobile Surveillance System*, 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
- Mandarin - intermediate
- Spanish - beginner

## **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