CURICCULUM VITAE
George Tzanetakis

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Education

Ph.D in Computer Science	Princeton University	*2002*
Thesis: *Manipulation, Analysis and Retrieval Systems for Audio Signals*	Advisor: Perry Cook	
M.A in Computer Science,	Princeton University	*1999*
B.S.E in Computer Science	University of Crete, Greece	*1997*

Main research focus

My main research interests are in the areas of Signal Processing, Machine Learning and Human Computer Interaction with specific applications to audio analysis. More specifically I am interested in creating algorithms that extract information from complex audio signals such as music and in designing novel user interfaces that utilize the extracted information to assist and enhance the browsing and retrieval of audio signals and collections.

Research interests

Signal Processing, Machine Learning, Audio Analysis, Music Perception, Human Computer Interaction, Computer Music, Multimedia, 3D Sound. Also Computer Graphics, Image Processing and Music Controllers.

Work Experience

Computer Science Department. Carnegie Mellon University *2002-2003*
Post Doctorate Fellow, Colleagues: Roger Dannenberg, Christos Faloutsos

Moodlogic Inc. *Summer 2000*
Chief designer and engineer of audio fingerprinting technology (see Software Section for details)

Computer Human Interaction Center (CHIC), SRI International *Summer 1999*
Development of graphical user interfaces and data structures in Java for multimedia browsing

Computer Vision and Robotics Group, ICS-FORTH, Greece *1995-1997*
Development of various image processing and computer vision tools
for use in image and multimedia authoring

Information Systems and Software Technology Group, ICS-FORTH, Greece *1994-1995*
Integration of image compression and processing tools to a cultural information system

Software Development Group, Computer Center, Univ. of Crete, Greece *1993-1994*
Database software development and maintenance.

Teaching Experience

Teaching Assistant, Princeton	*1997-1999*
CS-333 Advanced Programming Techniques	*Spring 1999*
CS-217 Introduction to Programming Systems	*Spring/Fall 1998*
CS-126 General Computer Science	*Fall 1997*
Teaching Assistant, University of Crete	*1997*
CS-213 C, Assembly and Unix	*Spring 1997*

Book Chapters

Audio Information Retrieval using MARSYAS
G.Tzanetakis and P.Cook, in "Current Research in Music Information Retrieval: Searching Audio, Midi and Notation", edited by D.Byrd, J.S. Downie and T.Crawford, (to be published) Kluwer Academic Publishers

Refereed Journal Publications

1. Pitch Histograms in Audio and Symbolic Music Information Retrieval
   G.Tzanetakis, A.Ermolinskyi, P.Cook, Journal of New Music Research (to appear), 2002
2. Musical Genre Classification of Audio Signals
   G.Tzanetakis and P.Cook, IEEE Transactions on Speech and Audio Processing, 10(5), July 2002
3. Music Analysis and Retrieval Systems
   G.Tzanetakis and P.Cook, Journal of American Society for Information Science (to appear) 2002
4. MARSYAS: A Framework for Audio Analysis
   G.Tzanetakis and P.Cook, Organized Sound 4(3), Cambridge University Press, 2000
5. Early Experiences and Challenges in Building and Using a Scalable Display Wall System
   K.Li, H.Chen, Y.Chen, D.Clark, P.Cook, S.Damianakis, G.Essl, A.Finkelstein, T.Funkhouser, T.Housel, A.Klein, Z.Liu, E.Praun, R.Samantha, B.Shedd, J.Singh, G.Tzanetakis, J.Zheng,
   IEEE Computer Graphics and Applications, "Off the Desktop: Large-Format Displays", 20(4), 2000

Refereed Conference Publications

1. Content-based retrieval of music in scalable peer-to-peer networks
   Jun Gao, George Tzanetakis, Peter Steenkiste, IEEE Conf. on Multimedia and Expo (ICME) 2003
2. Toward an Intelligent Editor for Jazz Music
   G.Tzanetakis, N.Hu, R.Dannenberg, IEEE Workshop on Image Analysis for
   Multimedia Interactive Systems (WIAMIS), 2003
3. Query User Interfaces for Music Information Retrieval
   G.Tzanetakis, A.Ermolinskyi, P.Cook, Int. Computer Music Conference (ICMC), 2002
4. Human Perception and Computer Extraction of Beat Strength
   G.Tzanetakis, G.Essl, P.Cook, Int. Conf. on Digital Audio Effects (DAFX), 2002
5. Pitch Histograms in Audio and Symbolic Music Information Retrieval
   G.Tzanetakis, A.Ermolinskyi, P.Cook, Int. Conference on Music Information Retrieval (ISMIR), 2002
6. Enhancing Sonic Browsing using Audio Information Retrieval
   E.Brazil, G.Tzanetakis, P.Cook and M.Fernstrom, Proc. Int. Conf. Auditory Display (ICAD), 2002
7. Automatic Musical Genre Classification of Audio Signals
   G.Tzanetakis, G.Essl and P.Cook, Proc. Int. Symposium on Music Information Retrieval (ISMIR), 2001
8. Audio Analysis using the Discrete Wavelet Transform
   G.Tzanetakis, G.Essl and P.Cook, Proc. WSES Int. Conf. Acoustics-Music: Theory and Applications (AMTA), 2001
   Reprinted in "Mathematics and Simulation with Biological, Economical and
   Musicoacoustical Applications", WSES Press 2001
9. MARSYAS3D: A prototype audio browser-editor using a large scale immersive visual and audio display
   G.Tzanetakis and P.Cook, Proc. Int. Conf. Auditory Display (ICAD), 2001
10. 3D Graphics Tools for Isolated Sound Collections
    G.Tzanetakis and P.Cook, Proc. Int. Conf. on Digital Audio Effects (DAFX), 2000
11. Audio Information Retrieval (AIR) Tools
    G.Tzanetakis and P.Cook, Proc. Int. Symposium on Music Information Retrieval (ISMIR), 2000
12. Sound Analysis using MPEG compressed Audio
    G.Tzanetakis and P.Cook, Proc. IEEE Int. Conf. Acoustics, Speech and Signal Proc. (ICASSP), 2000
13. Experiments in Computer-assisted Annotation of Audio
    G.Tzanetakis and P.Cook, Proc. Int. Conf. Auditory Display (ICAD), 2000
14. Multimedia Structuring using Trees
    G.Tzanetakis and L.Julia, Proc. RIAO Content-based Multimedia Information Access, 2000
15. Multi-feature segmentation for audio browsing and annotation
    G.Tzanetakis and P.Cook, Proc. IEEE WorkShop on Applications of Signal Proc. to Audio and Acoustics, 1999
16. A Framework for Audio Analysis based on Classification and Temporal Segmentation
    G.Tzanetakis and P.Cook, Proc. WorkShop on Music Technology and Audio Proc. Euromicro, 1999
17. $N >> 2$:Multi-speaker Display Systems for Virtual Reality and Spatial Audio Projection
    P.Cook, G.Essl, G.Tzanetakis and D.Trueman, Proc. Int. Conf. Auditory Display (ICAD), 1998
18. Motion estimation based on affine motion invariants
    G.Tzanetakis, M.Traka and G.Tziritas, European Signal Processing Conference, 1998

Submitted for Publication

1. Content and Context Aware Graphical User Interfaces for Audio
   G.Tzanetakis, P.Cook, ACM/Springer Verlag Multimedia Systems Journal
3. Musescape: an interactive content-aware browser music browser
   G.Tzanetakis, Interact Int. Conf. on Computer Human Interaction 2003

Invited Presentations

1. Beyond Retrieval, Reflections on Musical Content
   Workhop: Multimedia Information Retrieval in Business Applications, Franhofer Institute, Germany 2003
2. Tutorial: Music Information Retrieval for Audio Signals
   Int. Symposium on Music Information Retrieval (ISMIR), 2002
3. An Overview of Audio Information Retrieval
   Hearing Seminar, Computer Center for Research in Music and Acoustics (CCRMA) Stanford 2001
4. Music Analysis and Retrieval for Audio Signals
   Spoken Spoken Language Systems Group 2002, MIT Laboratory for Computer Science
5. Manipulation, Analysis and Retrieval Systems for Audio Signals
   Music Technology Group, Music Department McGill University 2002

Awards

Ericsson Award of Excellence for senior thesis:
"The use of GSM speech compression for pitch modification in a Greek Text-to-Speech system."
Received annual Greek National Foundation Scholarships in 1994, 1995, 1996
First prize 1996 Programming Contest, University of Crete, Greece

Service

Assistant Editor, Computer Music Journal
Reviewer :
ACM Transactions on Information Systems 2003
IEEE Transactions on Speech and Audio Processing 2002
Speech Communications 2002
Journal of New Music Research 2002
IEEE Transactions on Multimedia 2002
IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 1999
International Conference on Auditory Display (ICAD) 2000
International Conference on Music Information Retrieval (ISMIR) 2002

Memberships

IEEE, ACM, Acoustical Society of America (ASA), International Computer Music Association (ICMA), International Community for Auditory Display (ICAD)

Software

MARSYAS: Free software framework (C++ and Java) for computer audition research
`www.cs.princeton.edu/~gtzan/marsyas.html` (4600 downloads, 1780 different hosts from 30 countries)

Moodlogic Audio FingerPrinting: Content-based audio fingerprinting technology used for metadata annotation (`www.moodlogic.net`)
Characteristics: extraction = 2 secs, matching speed = 20 millisecs (in 1.5 million songs)
fingerprint size = 300 bytes, accuracy = 100% (13500 queries in 1.5 million songs, users = 80000)

Languages: Extensive experience with C++, Java, C, MATLAB
Familiar with ML, Python, Scheme, Mapple, Mathematica, GTK, TCL/TK

Music Education

Music Theory and Composition (10 courses while doing PhD in Computer Science)	Music Department, Princeton University	*1997-2001*
Musicology, Saxophone Performance, Theory	Athenaum Conservatory, Greece	*1993-1997*
Piano and Theory Studies	Heraklion Conservatory, Greece	*1985-1993*

References

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