

# Jason Filippou

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Machine Learning Researcher and Computer Science Lecturer with expertise in Computer Vision and C/C++, Java, Python, Scala, MATLAB, HTML/CSS, PHP. 8 years developing software, engaging in Human Action Recognition, and teaching advanced theoretical concepts and practical computer science applications.

**Machine Learning Research** - Developed Machine Learning algorithms and Dimensionality Reduction methods.

**Software Development** - Built Human Activity Recognition system and implemented a Java Data Structures library.

**Course Lectures** - 200 and 400-level classes with up to 340 students per class, and 670 in a course, for three years.

**Team Lead** - Supervise team of 30 TAs. Coordinated and published work with Event Recognition group.

System Programming

Database Administration

UNIX Scripting

Logic Programming

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## PROFESSIONAL EXPERIENCE

**Computer Science Lecturer**, University of Maryland College Park, MD 2016 - Present

- Teach courses in Discrete Mathematics (freshman/sophomore) and Advanced Data Structures (junior/senior).
- Achieved decrease in Discrete Mathematics fail/drop rate from 33% to 8.4% within first semester of teaching.
- Supervise academic progress of 430-670 undergraduate students and a team of 25-30 TAs each semester.
- First CS Department MSc Graduate Lecturer to offer 400-level courses (Advanced Data Structures).

**Computer Science Research Assistant**, University of Maryland College Park, MD 2012 - 2016

- Received research funding through Computer Vision Lab and Lab for Computational Cultural Dynamics.
- Coded Python scripts for training Stochastic Automata to forecast DDoS attacks given patterns of past attacks.
- Implemented a Zero-Shot Learning framework in MATLAB to learn action classifiers given a single example.
- Collaborated on research projects with R, Prolog, and Scala developers.

**Researcher / Developer**, Center for Scientific Research "Demokritos" Athens, Greece 2011 - 2012

- Developed Probabilistic Logic system for Human Action Recognition based on the Event Calculus.
- Published results indicating new system outperformed the baseline by as much as 55% F-measure.
- Engaged daily with Big Data processing tools, including Scala, Akka, and Apache Spark.

**Junior Software Developer**, Energa Power Trading Athens, Greece 2011

- Coded C# plugin to patch existing CRM system.
- Automated payroll processing through SQL scripts on MS SQL Server.

## EDUCATION

**Master of Science - Computer Science**, University of Maryland College Park, MD 2014

- Developed Computer Vision and Machine Learning algorithms in MATLAB and Python.
- Built Data Structures Library (> 20,000 lines of code) in Java as reference for data structures courses.
- Recipient of University of Maryland Graduate Fellowship, 2012-2016 and Dean's Fellowship, 2012-2014.
- Awarded John D. Gannon Conference Travel Award, Comp Sci Department, University of Maryland, 2013

**Bachelor of Science - Computer Science**, University of Athens Athens, Greece 2012

- Collaborated with peers in full-stack, bottom-up, C implementation of RDBMS.
- Developed RSSH (Really Simple SHell), emulator of bash shell, in C++.
- Developed "e-class" platform using HTML/CSS and PHP.
- Languages - English (professional fluency). Greek (native). French (elementary).

## SAMPLE SOFTWARE PROJECTS

- Various Machine Learning algorithms in Python (e.g Decision Trees, Linear Classifiers, Recommender Systems, SIFT Clustering). Collaboration with one peer. Source: [github.com/JasonFil/Python-ML](https://github.com/JasonFil/Python-ML).
- Genomic Assembly Model Testing in Python (investigation of read coverage and mate-pair size agreement of FASTA-encoded DNA sequences). Collaboration with three peers. Source: [github.com/JasonFil/assembly-testing](https://github.com/JasonFil/assembly-testing)
- Several Computer Vision algorithms in MATLAB (e.g, Normalized Cut, Edge Detection, Stereo Matching, Bag-of-words Classifiers). Source: [github.com/JasonFil/Vision](https://github.com/JasonFil/Vision)
- Linear and Non-Linear Dimensionality Reduction algorithms (Linear Discriminant Analysis, Locality - Sensitive Hashing, ISOMAP). Source: [github.com/JasonFil/DimReduce](https://github.com/JasonFil/DimReduce)
- Java Library of Data Structures (e.g, Heaps, Lists, Queues, Balanced Binary Trees, B-Trees, Hash Tables, "Patricia" Tries, KD-Trees, QuadTrees). Source made private to discourage academic plagiarism (access code available on request) [bitbucket.org/JasonFil/](https://bitbucket.org/JasonFil/).

## PUBLICATIONS / POSTERS / TALKS

- Evan Golub, William Gasarch, and Jason Filippou: To Click, Plick, Point, Card or Survey? 23rd Annual Innovations in Teaching and Learning Conference, University of Maryland, 05-2017. ([PDF poster](#))
- Jason Filippou and Varun Manjunatha: Assigning Affinity-Preserving Binary Hash-Codes to Images. CS UMD Scholarly Paper Archive, 12-2014 ([PDF](#))
- Anastasios Skarlatidis, Alex Artikis, Jason Filippou, and George Paliouras: A Probabilistic Logic Programming Event Calculus. Special Issue on Probability, Logic & Learning of Theory and Practice of Logic Programming, 03-2013 ([PDF](#))
- Alex Artikis, Jason Filippou, and Nikos Katzouris: Tutorial on Complex Event Recognition. 7th Hellenic Conference on Artificial Intelligence, 06-2012.