

# VITALY ABLAVSKY

vxa@uw.edu  
University of Washington  
Applied Physics Laboratory  
<https://apl.uw.edu/>

v.ablavsky@ieee.org  
VoIP: +1 617 818 6582  
Skype: vitaly.ablavsky  
<https://corvidim.net/ablavsky/>

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## *Education*

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| Mar. 2011 | Ph.D., Computer Science, Boston University<br><i>Thesis: Layered Graphical Models for Tracking Partially-Occluded Moving Objects in Video</i> |
| Feb. 1996 | M.S., Computer Science, University of Massachusetts at Amherst  |
| May 1992  | B.A., Mathematics (cum laude with honors), Brandeis University  |

## *Research expertise*

- Technical background
  - image processing: motion estimation, video compression
  - computer vision: video analysis and event recognition, object detection, person detection and tracking, video surveillance, 3D biomedical image analysis
  - machine learning: deep learning, probabilistic graphical models, transfer learning/domain adaptation
- Expertise established as part of independent and collaborative research
  - layered (2.5D) scene representation; person tracking in the presence of relocatable occluders
  - multi-target tracking with deterministic and stochastic methods and with deep neural networks
  - object detection with deep neural networks and classical methods
  - action recognition and classification
  - behavior analysis in team sports with conditional random fields
  - multi-task learning with applications to structure recognition in 3D brain imagery
- Publications and presentations
  - publishes in journals and conferences, including top-tier venues ([see pdf online](#))
  - presents at academic venues and to funding agencies
- Procurement of funding
  - identifies funding opportunities; recruits industrial and academic partners
  - writes and contributes to winning grants from DARPA, IARPA, and AFRL ([see pdf online](#))

## *Software-engineering expertise*

- Proven record architecting, developing, testing, and deploying general-purpose scientific-computing frameworks and optimized special-purpose systems; focus on object- and pattern-oriented architecture
- Proven record of leadership: establishes technical direction, communicates effectively, recruits and mentors team members; strongly focused on team success
- Tools
  - system building: C++11 with GCC 4.8.x and VisualStudio 2015
  - prototyping: Python 3.6 and MATLAB (including interfaces to C (MEX), Java, MATLAB server)
  - machine learning, image analysis: PyTorch, Tensorflow, Theano, Dlib, OpenCV, ITK, ImageJ/Fiji
  - SCM: Git, AccuRev, ClearCase

## *Academic experience and community service*

- teaching fellow: undergraduate/graduate course in machine learning; undergraduate/graduate course in artificial intelligence; and undergraduate course in C# programming for the .NET platform
- co-advisor for Ph.D. research assistants as well as M.S. students and interns
- co-organizer of research colloquiums; captain of student volunteers for AVSS 2010
- reviewer for AVSS, CIVR, CVPR, ECCV, FUSION, ICCV, ICPR, IJPRAI, NIPS, PAMI, and VSSN

## *Professional appointments*

- 2019 - present    **University of Washington** (<https://apl.uw.edu/>)  
*Principal Research Scientist, Applied Physics Laboratory*  
*Affiliate Assistant Professor, Electrical & Computer Engineering Dept.*
- 2018 - 2019    **Boston University** (<http://www.bu.edu/cs/ivc>)  
*Senior Research Scientist, Image and Video Computing Group, Computer Science Dept.*
  - Co-advising students
  - Writing grants
  - Collaborating on research projects with faculty and post-docs
- 2014 - 2018    **Systems & Technology Research** (<http://www.stresearch.com>)  
*Senior Member of Technical Staff, Video & Image Understanding Group*
  - Led and/or contributed to winning proposals for AFRL, DARPA, and IARPA
  - Led key technical areas on multi-million dollar multi-year programs
  - Served as PI, introduced key innovations on small-scale exploratory programs
- 2011 - 2014    **EPFL (Swiss Federal Institute of Technology)** (<http://cvlab.epfl.ch>)  
*Post-doctoral Researcher in the Computer Vision Laboratory*
  - Developed algorithms to recognize players' behavior in team sports
  - Developed transfer-learning algorithms to improve structure recognition in 3D electron-microscope images
- 2005 - 2011    **Boston University** (<http://www.bu.edu/cs/ivc>)  
*Research Assistant in the Image and Video Computing Laboratory, Computer Science Dept.*
  - Thesis topic: layered representations and multi-object tracking under occlusions
  - Conducted research on optimizing histogram kernels for action recognition
  - Collaborated on the development of parameter-sensitive object detectors
- 1999 - 2005    **Charles River Analytics, Inc.** (<http://www.cra.com>)  
*Senior Software Engineer, then Principal Research Engineer, Sensor Processing Division*
  - Developed path-planning and automated-target-recognition algorithms
  - Led the design and development of advanced computer-vision solutions for DARPA and DoD: video enhancement, target tracking, gesture recognition
  - Wrote and co-wrote winning Phase I and follow-on Phase II proposals
  - Designed and co-implemented VisionKit v.1.0
  - Actively participated in recruiting and mentoring junior colleagues
- 1998 - 1999    **Cognex Corporation** (<http://www.cognex.com>)  
*Software Engineer in the Vision Tools and Applications Group*
  - Designed and implemented machine-vision algorithms for high-accuracy inspection and industrial robot guidance
  - Delivered complete vision applications (on special-purpose hardware accelerators)
  - Contributed to large-scale C++ framework, including QA and release engineering
- 1996 - 1998    **Amerinex Applied Imaging, Inc./ADCIS, SA** (<http://www.adcis.net>)  
*Senior Software Engineer, Project Aphelion*
  - Primary development: Aphelion (image-processing/understanding environment)
  - Designed and implemented low- and intermediate-level vision algorithms with applications to fiber microscopy, medical imaging, 3D object recognition, etc.
  - Implemented driver interfaces to PCI frame-grabbers; assisted technical writers
- 1993 - 1996    **UMass Amherst** (<http://vis-www.cs.umass.edu>)  
*Research Assistant in the Computer Vision Laboratory, Computer Science Dept.*
  - Developed a shape-from-shading algorithm for specular surface reconstruction
  - Built a VME-based image acquisition system to control multiple Kodak M1.6's

*IEEE Senior Member. Citizenship: U.S.*