

Department of Computer Science
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Personal

Place of Birth: New York, U.S.A. (May 6, 1985)
Citizenship: France, U.S.A
Permanent Residence: Switzerland (Visa C upon return)
Languages: French (mother tongue), English (fluent), German (fluent)

Education

12.2008 - 09.2011 PhD, Computer Science
Johns Hopkins University, Baltimore, MD, U.S.A
Thesis advisor: Dr. Gregory Hager
Co-advisor: Dr. Bruno Jedynak

09.2007 - 12.2008 M.Sc. Computer Science
Johns Hopkins University, Baltimore, MD, U.S.A
Thesis supervisor: Dr. Bruno Jedynak

09.2003 - 06.2007 B.Sc. Cognitive Systems: Computational Intelligence
University of British Columbia, Vancouver, BC, Canada
Thesis supervisor: Dr. Bob Pritchard

Fellowships

2008 Recipient of the Acheson J. Duncan Fund for Advancement of Research
in Statistics

Honors and Awards

2008 Department of Computer Science Teaching Award, JHU
2008 Co-Winner of the JHU Computer Vision Grand Challenge
2006 Deans Honor List, UBC
2003 Undergraduate Scholarship Recipient, UBC

Professional Experience

09.2007 - 05.2011 *Research Assistant*
Dept. Computer Science, Johns Hopkins University, Baltimore, USA
Supervisor: Dr. Gregory Hager

06.2007 - 08.2007 *Research Assistant*
IDIAP Research Institute, Martigny, Switzerland
Supervisor: Dr. François Fleuret

09.2005 - 06.2007 *Undergraduate Research Assistant*
Dept. Electrical Engineering, University of British Columbia, Vancouver, Canada
Supervisor: Dr. Sidney Fels and Dr. Robert Pritchard

05.2005 - 07.2005 *Research Assistant*
Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland
Supervisor: Dr. Bradley Nelson

05.2004 - 07.2004 *Research Assistant*
The Wearable Computing Laboratory, ETH Zurich, Switzerland
Supervisor: Dr. Gerhard Tröster

Publications

The publications below can be found at:
<http://cs.jhu.edu/~sznitman/publications.html>

Articles in Peer-reviewed Journals

Jedynak B., Frazier P., and **Sznitman R.**. “Twenty questions with noise: Bayes optimal policies for entropy loss”. *Journal of Applied Probability* (2011) (accepted).

Sznitman J., Shen X., **Sznitman R.**, and Arratia P.E. “Propulsive force measurements and flow behavior of undulatory swimmers at low Reynolds number”, *Physics of Fluids* 22: 121901 (2010)

Sznitman R., Gupta M., Hager G.D., Arratia P.E. and Sznitman J. “Multi-Environment Model Estimation for Motility Analysis of *Caenorhabditis elegans*”, *PLoS ONE*, 5(7): e11631 (2010)

Sznitman R. and Jedynak B. “Active Testing for Face Detection and Localization”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 32 (10), 1914-1920 (2010)

Articles in Peer-reviewed Conference Proceedings

Richa R., **Sznitman R.**, Taylor R., and Hager G. “Visual Tracking Using the Sum of Conditional Variance”. In *Proceedings of the IEEE Conference on Intelligent Robots and Systems (IROS)*, (2011)

Sznitman R., Basu A., Richa R., Handa J., Gehlbach P., Taylor R., Jedynak B. and Hager G. “Unified Detection and Tracking in Retinal Microsurgery”. In *Proceedings of the 14th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2011 [Oral Presentation]

Richa R., Balicki M., Meisner E., **Sznitman R.**, Taylor R. and Hager G. “Visual tracking of surgical tools for collision detection in retinal surgery”. In *Proceedings 2nd International Conference on Information Processing in Computer-Assisted Interventions (IPCAI)*, (2011)

Sznitman R., Rother D., Handa J., Gehlbach P., Hager G. and Taylor R. “Adaptive Multispectral Illumination for Retinal Microsurgery”, *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 465-472 (2010)

Sznitman J., Shen X., Purohit P.K., **Sznitman R.** and Arratia P.A. . “Swimming behavior of the nematode *Caenorhabditis elegans*: Bridging small-scale locomotion with biomechanics”, *World Congress on Biomechanics*, 28-32 (2010)

Sznitman R., Billings S., Rother D., Mirota D., Yang Y., Handa J., Gehlbach P., Kang J., Hager G. and Taylor R. “Active Multispectral Illumination and Image Fusion for Retinal Microsurgery”, *International Conference on Information Processing in Computer-Assisted Interventions (IPCAI)*, 12-22 (2010)

Sznitman R., Lin H., Manaswi G. and Hager G. “Active Background Modeling: Actors on a Stage”, *IEEE International Conference on Computer Vision, Workshop on Visual Surveillance (ICCV/WVS)*, 1222-1228 (2009)

In Preparation

Sznitman R., Billings S., Rother D., Mirota D., Yang Y., Handa J., Gehlbach P., Kang J., Hager G. and Taylor R. “A Multispectral Illumination Framework Towards Phototoxicity Reduction in Retinal Microsurgery”, (2011)

Sznitman R., Basu A., Richa R., Jedynak B. and Hager G. “An Information Theoretic Approach to Unified Detection and Tracking for Retinal Microsurgery”, (2011)

Sznitman R., Basu A., Handa, J., Gehlbach P., Taylor R. and Hager G. “Validating Tool Detection and Tracking for in vivo Retinal Microsurgery”, (2011)

Invited Presentations

Multispectral Illumination Policy for Retinal Surgery, *INFORM Conference, Montreal, Canada* (06/2011).

Playing 20 Questions with Corrupted Answers: Applications to object localization and Tracking, *IDIAP Research Institute* (03/2011), *IDSIA Research Institute* (03/2011), *Ecole Polytechnique de Lausanne* (03/2011), *Eidgenössische Technische Hochschule Zurich* (03/2011),

Towards Safer Retinal Microsurgery: Visualization via Multispectral Illumination, *University of Bern* (03/2011).

Active Testing for Face Detection and Localization, *Max Planck Institute for Biological Cybernetics* (01/2010), *IDIAP Research Institute* (06/2009), *Johns Hopkins University* (01/2009).

Teaching Experience

Instructor for

- *Exploring Vision in the Real World*

Dept. Computer Science, JHU (01-2011)

A short introductory class to the domain of computer vision (25+ students)

Guest Lecturer for

- *Computer Vision*, Dept. Computer Science, JHU (11-2010)
Presentation on Boosting, Face and Object detection.
- *Computer Vision*, Dept. Computer Science, JHU (11-2009)
Presentation on Boosting and Face detection.
- *M&M Freshman*, Dept. Computer Science, JHU (11-2009)
A one hour introduction to object detection and recognition for first year Computer Science students.
- *Computer Vision*, Dept. Computer Science, JHU (11-2008)
Presentation on Boosting and Face detection.
- *Data Structures*, Dept. Computer Science, JHU (02-2008)
Presentation on algorithm complexity.

Teaching assistant for

- *Computer Vision*, Dept. Computer Science, JHU (09.2008-12-2008)
Lecture Presentation, 3-hours/week office hours and homework development and correction
- *Data Structures*, Dept. Computer Science, JHU (01.2008-05.2008)
Weekly review sessions, 3-hours/week office hours and homework development
- *Algorithms*, Dept. Computer Science, JHU (09.2007-12.2007)
Weekly review sessions, 3-hours/week office hours, development of weekly homeworks and solutions, development of examinations and solutions

Student Supervision

Anasuya Basu, **Masters Thesis supervision** on surgical tool detection for retinal microsurgery. *Johns Hopkins University*, 2010.

Wolfgang Wagner, **Undergraduate supervision** on examination of modern object detection methods. *Johns Hopkins University*, 2010.

Saurav Ghoshal, **Undergraduate supervision** development of annotation toolkit for retinal microsurgery. *Johns Hopkins University*, 2010.

Manaswi Gupta, **Undergraduate Thesis supervision** on background modeling in retinal microscopic images. *Johns Hopkins University*, 2009-2010.

Patents

Programmable Multispectral Illumination System for Surgery and Visualization of Light-Sensitive Tissues, International Patent Application No. PCT/US2010/044596.

Services

Invited reviewer for

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- International Conference on Information Processing in Computer-Assisted Interventions (IPCAI)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)

Supervised reviewer (Additional Reviewers) for

- European Conference on Computer Vision (ECCV)
- IEEE International Conference on Computer Vision (ICCV)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

**Computer
Languages and
Systems**

C/C++, Java, Haskell, Prolog, Shell Scripting, Matlab, Maple, LaTeX, HTML, OpenCV,
Assembly
Windows, Linux, Solaris, Mac OS