

# Kuya Takami

Website: <http://www.me.vt.edu/cms/people/kuya-takami/>

GitHub: <https://github.com/ku-ya>

LinkedIn: <https://www.linkedin.com/in/kuyat>

Phone: 540.230.3932

Email: [kuya@vt.edu](mailto:kuya@vt.edu)

460 Old Turner St.

100S Randolph Hall

Blacksburg, VA 24061

## EDUCATION

**Virginia Polytechnic Institute and State University** 2015  
Ph.D. Mechanical Engineering  
Thesis: "Non-Field-of-View Acoustic Target Estimation"  
Advisor: Professor Tomonari Furukawa

**University of Wisconsin-Madison** 2011  
M.S. Mechanical Engineering  
Advisor: Professor Scott Sanders  
**University of Wisconsin-Madison** 2008  
B.S. Biomedical Engineering (Biomechanics)

## APPOINTMENTS

**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY** Blacksburg, VA (10/2015 - Present)  
**Postdoctoral Researcher**   **Graduate Research Assistant/ \*Graduate Teaching Assistant** (08/2011 - 09/2015)

- Developed non-line-of-sight (NLOS) hybrid optical/acoustical target localization scheme to model and predict the state of sound source in a complex environment.
- Modeled sound reflection/diffraction based NLOS target estimation for mobile robot localization.
- Assisted underwater autonomous navigation project on sonar localization simulation using simultaneous localization and mapping (SLAM) for NSF Naval Research Laboratory.
- Worked on real-time autonomous driving using Grid-based SLAM in collaboration with ZMP and University of Technology, Sydney.
- Worked on tire noise prediction model entailing mathematical formulations, and fluid-solid interaction modeling funded by NSF Center for Tire Research.
- \*Instructor (ME 2024-Engineering Design and Economics): Lectured mechanical engineering students on product development.
- \*Project Advisor (ME4015/4016): Supervised senior design project on autonomous driving, and automotive alternator design and experimental validation.

**BRIDGESTONE AMERICAS, INC** Akron, OH (05 - 08/2014)  
**Advanced Tire Technology - Research intern**

- Developed tire noise analysis procedure and designed and implemented tire noise experimental device based on an FPGA controller.

**ZMP, INC** Tokyo, Japan (01 - 07/2013)  
**Research Engineer in Autonomous Vehicles**

- Assisted programming and hardware development for an autonomous driving vehicle, including data acquisition, implementation of SLAM, and vehicle modeling/control.
- Designed and constructed a quadrupedal machine learning-based evolving robot by calculating kinematics and specifying components.

**UNIVERSITY OF WISCONSIN-MADISON** Madison, WI (03/2009 - 08/2011)  
**Graduate Research Assistant for Engine Research Center**

- Conducted laser and fiber optics centered research optimizing optical element design in harsh environments.
- Developed a noninvasive laser grid tomography temperature measurement system for jet and IC engines.

**UNIVERSITY OF WISCONSIN HOSPITAL** Madison, WI (08/2007 - 12/2008)  
**MRI Research Assistant for Radiology Department**

- Studied MRI-based knee analysis, quantified quality of the image, and determined change of cartilage volumes.

## HONORS AND AWARDS

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2007	Most Outstanding Physics Award <sup>†</sup>	2011	Pratt Graduate Fellowship <sup>‡</sup>
2012	Pratt Graduate Fellowship <sup>‡</sup>	2014	Pratt Graduate Fellowship <sup>‡</sup>
2015	ASME:IDETC/CIE Best Student Paper Award		

<sup>†</sup>: Scholarship to the best student in two semester physics courses at University of Wisconsin-EC

<sup>‡</sup>: Awarded to students who are aggressively recruited by other top engineering colleges

## TECHNICAL STRENGTH

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Computer Languages:	C/C++, Java	System:	Windows, Linux, OS X
Software:	ROS, MATLAB, Visual Studio	Languages:	Japanese (native)
CAD & FEA:	SolidWorks, PTC Creo, Abaqus		

## EXTRACURRICULAR EXPERIENCE

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Organization	Mechanical Engineering Graduate Student Council (2013-2015) Mechanical Engineering Graduate Ambassador (2013-2015) President of VT Slackline Club (2011-2014) President of Japanese Conversation Group (2012-2015) President of Japanese Cultural Society in University of Wisconsin-EC (2005-2006)
Volunteer	Graduate student mentor (2014-Present)
Society	National Society of Leadership and Success, Biomedical Engineering Society

## PUBLICATIONS

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**K. Takami**, T. Furukawa, M. Kumon, D. Kimoto, and G. Dissanayake. "Estimation of a nonvisible field-of-view mobile target incorporating optical and acoustic sensors," *Autonomous Robots*, 2015.

**K. Takami**, T. Furukawa, M. Kumon, and G. Dissanayake. "Non-Field-of-View Acoustic Target Estimation in Complex Indoor Environment," *Springer Tracts in Advanced Robotics*, 2015.

**K. Takami**, T. Furukawa, M. Kumon, and L. Mak, "Non-Field-of-View Indoor Sound Source Localization based on Reflection and Diffraction," *Multi-sensor Integration and Fusion*, IEEE, 2015.

**K. Takami**, T. Furukawa, M. Kumon, and G. Dissanayake. "Non-Field-of-View Acoustic Target Estimation in Complex Indoor Environment," *Field and Service Robotics*, 2015.

T. Furukawa, **K. Takami**, X. Tong, D. Watman, A. Hamed, R. Ranasinghe and G. Dissayanake, "Map-based Navigation of an Autonomous Car Using Grid-based Scan-to-Map Matching," *ASME IDETC*, 2015.

**K. Takami** and T. Furukawa, "High-Resolution Deformation Measurement System for Fast Rotating Tire," *ASME IDETC/CIE*, 2015.

**K. Takami** and T. Furukawa, "High-Resolution Deformation Measurement System for Fast Rotating Tires Towards Noise Prediction," *Euronoise*, 2015.

M. Kumon, D. Kimoto, **K. Takami** and T. Furukawa, "Acoustic recursive Bayesian estimation for non-field-of-view targets," In *Image Analysis for Multimedia Interactive Services (WIAMIS)*, IEEE, 2013.

M. Kumon, D. Kimoto, **K. Takami** and T. Furukawa. "Bayesian non-field-of-view target estimation incorporating an acoustic sensor," In *Intelligent Robots and Systems, IEEE/RSJ International Conference*, 2013.

**K. Takami**, S. Taheri, M. Taheri and T. Furukawa, "Prediction of Railroad Track Foundation Defects Using Wavelets," *Joint Rail Conference, ASME*, 2013.

J. M. Whitney, **K. Takami**, S. T. Sanders, and Y. Okura. "Design of system for rugged, low-noise fiber-optic access to high-temperature, high-pressure environments," *Sensors Journal, IEEE*, 2011.

A. Xinliang, T. Kraetschmer, **K. Takami**, S. T. Sanders, L. Ma, et al. "Validation of temperature imaging by H<sub>2</sub>O absorption spectroscopy using hyperspectral tomography in controlled experiments," *Journal of Applied Optics*, 2011.