# Curriculum Vitae

Chizhao Yang, *Ph.D. Student*
Department of Mechanical and Aerospace Engineering
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## Education

**Ph.D.** in Aerospace Engineering — expected December 2020
West Virginia University, Morgantown, WV
Research Advisor: Dr. Yu Gu

**M.S.** in Electrical Engineering — December 2015
Stevens Institute Technology, Hoboken, NJ

**B.S.** in Electrical Engineering — June 2012
Sichuan Normal University, Chengdu, China

## Research Interests

**Navigation**: Bio-inspired Navigation, Magnetic based Localization, Laser based SLAM, Obstacle avoidance
**Control & Dynamics:** Modeling and optimal control design of hybrid dynamical system
**Machine Learning**
**Robotic**

## Awards & Honors

**West Virginia University Outstanding Merit Fellowship** 2017-2018

**Final Challenge ($750,00 Prize) Winner** 09/2016
- *Key Team Member* (Collision Avoidance, SLAM)
- NASA Centennial Challenge (Sample Return Robot Challenge)

**Excellent Undergraduate Student Award by Sichuan Province** 2008-2012
- Four Consecutive Academic Year from 2008 to 2012

- Top 1% of students in Province

## Research Experience

**Graduate Research Assistant**
Interactive Robotics Laboratory, West Virginia University 2016-present
- Develop Laser based Simultaneous Localization and Mapping (SLAM) algorithm
- Develop Magnetic Navigation algorithm using particle filter based on magnetic anomaly map
- Develop Indoor Navigation algorithm based on structure of indoor room

HCMM Lab, Stevens Institute of Technology 2015-2016
- Implement a rapid search algorithm in the Apache Accumulo Database

ECE department, Stevens Institute of Technology 2015
- Summer research, Robotic Printer

**Undergraduate Research Assistant**
Engineering Lab, Sichuan Normal University 2008-2010
- Design PCB board for power supply

## Publications

**Journal Publications**
- Gu, Y., Strader, J., Ohi, N., Harper, S., Lassak, K., Yang, C., Kogan, L., Hu, B., Gramlich, M., Kavi, R. and Gross, J., 2018. *Robot Foraging: Autonomous Sample Return in a Large Outdoor Environment*. IEEE Robotics & Automation Magazine, 25(3), pp.93-101.

**Conference Publications**
- Yang, C., Strader, J., Gu, Y., Hypes, A., Canciani, A., & Brink, K. (2018). "*Cooperative UAV Navigation using Inter-Vehicle Ranging and Magnetic Anomaly Measurements*". In 2018 AIAA Guidance, Navigation, and Control Conference (p. 1595).

- Ohi, Nicholas, Kyle Lassak, Ryan Watson, Jared Strader, Yixin Du, Chizhao Yang, Gabrielle Hedrick et al. "*Design of an autonomous precision pollination robot*." In 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 7711-7718. IEEE, 2018.

- Strader, J., Nguyen, J., Tatsch, C., Du, Y., Lassak, K., Buzzo, B., Watson, R., Cerbone, H., Ohi, N., Yang, C. and Gu, Y., 2019. *Flower Interaction Subsystem for a Precision Pollination Robot*. arXiv preprint arXiv:1906.09294.

- Yang, Chizhao, Watson, Ryan M., Gross, Jason N., Gu, Yu, "*Localization Algorithm Design and Evaluation for an Autonomous Pollination Robot*," Proceedings of the 32nd International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2019), Miami, Florida, September 2019, pp. 2702-2710.

## Invited Presentation

**Invited Talk**
Robert H. Mollohan Research Center, Fairmont, WV 10/2017
*"Cataglyphis: An Autonomous Sample Return Robot"*

Sichuan Normal University, Chengdu, China 03/2019
"*Robotic localization"*

## Work Experience

**Technician**
Helenbo Electrical Appliance Co., Ltd**,** Foshan, China 02/2014-06/2014
- Assist design Engineers to design PCB of Air Coolers' controller
- Assist production engineers to maintenance equipment in the production lines

**Summer Internship**
Dafeishui Hydropower Station, Chengdu, China 06/2012-07/2012
- Monitor of generating equipment operation
- Assist to maintenance 35KV high voltage transmission line

## Skills

**Languages**: C++, Matlab, Python, Script, JAVA, HTML,
**Software**: Robot Operator System (ROS), AutoCAD, ORCAD, Altium Designer
**Hardware**: Velodyne LiDAR, Raspberry Pi, Particle Photon

# Media Coverage

**Television**

- Daily Planet, Discovery Channel Canada, April 2017.
- "What Happened This Year @ NASA," NASA, Dec 2016.
- "This Week @ NASA," NASA, Sept. 9, 2016.

**Article**

- "Video Friday," IEEE Spectrum Robotics Blog, April 2017.
- "WVU to Develop Software for Future NASA Mars Rovers, Test 3-D Printed Foams on ISS," WVU Today, July 2017.
- "NASA Reveals the Unknown in 2016," NASA, Dec 2016
- "From a Massachusetts Field to the Plains of Mars," Air & Space Smithsonian Magazine, Nov 2016.
- WVU Magazine, Spring 2017.
- "US Team Wins USD 750k NASA Award for Sample-Retrieving Robot," Business Standard, Oct 2016.
- "NASA's Mars Rover Prototype Challenge Ends; $750K Awarded for Autonomous Technology," Top Examiner, Oct 2016.
- "NASA Awards $750K in Sample Return Robot Challenge for Autonomous Technology," NASA, Sep 2016.
- "West Virginia University Students Win Robotics Competition," The Associated Press, ABC News, The Washington Post, The New York Times, Yahoo Tech, USA Today, ASEE, CNS News, News Times, The Hour, the News & Observer, Midland Daily News, Las Vegas Sun, Seattle Pi, SFGATE, WTOP, The State Journal, Neuron, among others, Sep 2016.
- "West Virginia University's Cataglyphis Robot Wins NASA Robotics Mission," Nature World News, Sep 2016.
- "Determined WVU Students are First, and Now Only, Winners of NASA Robot Competition," WVU Today, Video, Sep 2016.
- "After 5 Years, NASA has a Centennial Challenge Winner," WPI News, Sep 2016.
- "WVU Team Wins NASA Robot Challenge," Herald Standard, The Dominion Post, Sep 2016.
- "Robots Take Over WPI; One Leaves with $750,000 and Technology that Could Get to Mars," MassLive, Sep 2016.
- "NASA Awards $750K at WPI to Winner of Robot Competition," Telegram, Sep 2016.

- "NASA Ran a Treasure Hunt for Robots to Develop Space Exploration Tech," Motherboard, Sep 2016.
- "WVU Team Preps for Upcoming Sample Return Robot Challenge," WVU Today, Aug 2016.

## University Service

**Visitors Services Volunteer**
Watts Museum, WVU 2017-present
**Special Advisor**
WVU Chinese Students and Scholars Association 2016-2017
**Volunteer**
Stevens Chinese Students and Scholars Association 2014-2015
**President**
Student Union in College of Engineering, SNU 2010-2011