

# JAMES T. MORTON

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## EDUCATION

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**Undergraduate** Miami University  
2010 - Present B.S. in Computer Science  
B.S. in Electrical Engineering  
B.S. in Mathematics and Statistics  
B.S. in Engineering Physics  
GPA: 3.87/4.0

**Study Abroad** Hong Kong University of Science and Technology  
Spring 2012

**Secondary** Talawanda High School  
2006 - 2010 Class rank: 2/275  
GPA: 4.45/4.0

## SKILLS

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### Technical Skills

- Python
- C/C++
- Java
- L<sup>A</sup>T<sub>E</sub>X
- Matlab
- R
- Bash
- Unix
- ROS
- Hadoop
- CUDA
- git
- Verilog
- MIPS assembly
- MySQL
- svn

### Languages

- Chinese – Working Proficiency
- English – Native speaker

## EXPERIENCE

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### Research Experience

*Data Scientist Intern* John Hopkins University, MD , Summer 2013

- Worked with Dr. Benjamin Langmead to develop scalable RNAseq Analysis software
- Integrated Hadoop framework for RNAseq analysis software
- Developed a novel spliced alignment algorithm using Bowtie
- Used SWIG to interface Python and C code

*Undergraduate Research Program* Cold Spring Harbor Laboratories, NY , Summer 2012

- Worked with Dr. Alex Dobin to develop software to study personal genomics
- Developed software that maps reads between the reference and personal genome
- Studied Allele Specific Expression in a personal genome

*Research Assistant* Miami University, OH , Spring 2011 - Fall 2011

- Worked with Dr. John Karro and Dr. Chun Liang
- Designed Hidden Markov Model software to identify poly(A) tails in RNAseq data
- Designed Profile Hidden Markov Model software to identify adapter sequences in RNAseq data
- Contributed HMMER parser to Biopython

#### *Research Assistant*

Miami University, OH , Summer 2010

- Worked with Dr. Qihou Zhou on processing incoherent scattering radar data
- Developed signal processing algorithms to extract atmospheric parameters from this data

#### *Engineering Aide*

Wright Patterson Air Force Base, OH, Summer 2010

- Designed and implemented a time difference of arrival localization algorithm
- Programmed USRP using GNU radio for signal transmission and receiving

#### *Wright Scholar*

Wright Patterson Air Force Base, OH, Summer 2009

- Studied cognitive radio, radar, and GPS concepts and techniques

### **Teaching Experience**

#### *Teaching Assistant*

Miami University, OH, Spring 2011

- Assisted Professor Mostafa Modirrousta in teaching of two sections of Intro to Engineering labs
- Graded lab reports for a class of 32 students

#### *Teaching Assistant*

Miami University, OH, Spring 2008

- Assisted Professor Felice Marcus to teach a class of Chinese engineers English

### **Class Projects**

#### *Intelligent Ground Vehicle Competition*

Rochester, MI , Summer 2013

- Interfaced with the Bumblebee2 Stereo camera
- Developed computer vision algorithms to identify white lines on the ground
- Interfaced CUDA with ROS to speed up computer vision software
- Helped install ROS framework on autonomous vehicle

#### *Embedded Systems*

Miami University, OH, Spring 2013

- Participated in a group project and built a LED POV sphere

#### *Artificial Intelligence*

Miami University, OH, Fall 2012

- Participated in a group project to develop an AI player to play Breakthrough
- Developed a C++/Java interface using JNI

#### *Databases*

Miami University, OH, Fall 2011

- Participated in a group project to develop a social media program for recipe sharing
- Developed a Java Swing application for the user interface
- Constructed a SQL Query to store information about users and recipes

#### *Digital Systems and Design*

Miami University, OH, Fall 2010

- Participated in a group project for Redhawk Duals, a competitive FPGA-based video game
- Designed and implemented a VGA interface for a FPGA
- Implemented a Finite State Machine to solve the Longest Path Problem

### **OTHER ACTIVITIES**

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- National Society of Collegiate Scholars, Fall 2012 - Present
- Miami University Collegiate Chorale, Fall 2012.
- Institute of Navigation Autonomous Snowplow Competition support team, 2010-Present
- IEEE Miami Student Chapter Treasurer, Fall 2011- Spring 2012
- Miami University Mens Glee Club, Fall 2011-Spring 2012
- ACM Programming Contest, Fall 2011, Fall 2012
- International Global Game Jam, Spring 2011
- Miami University Symphony Orchestra, Spring 2010, Fall 2009

## HONORS

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- Goldwater Scholar, 2013
- Harrison Scholar, Miami University, 2010-2014
- Provost Academic Achievement Award, Miami University, 2012
- Ohio Space Grant Scholar Award, NASA, 2012 - 2013
- NSF REU, CSHL, Summer 2012
- Deans List, Miami University, 2010-12
- Mary Jean and Joseph R. Priest Scholarship, Department of Physics, Miami University, 2012
- President List, Miami University, 2010-11
- Nestle Scholar, Computer Sci. and Software Eng. Dept, Miami University, 2011
- Faculty Prize, Department of Mathematics, Miami University, 2011
- Joseph A. Culler Award, Department of Physics, Miami University, 2011
- R.L. Edwards Scholarship, Department of Physics, Miami University, 2011
- Joseph A. Culler Award, Department of Physics, Miami University, 2010
- NSF Travel Grant, Presenting a poster paper at Coupling, Energetics, and Dynamics of Atmospheric Regions workshop in Boulder, CO, 2010
- Second place team leader, Institute of Navigation Mini-Urban Challenge, Ohio competition, 2010
- Wright Scholar, Air Force Research Laboratory, Wright Patterson Air Force Base, 2009
- First place team member, Institute of Navigation Mini-Urban Challenge, Ohio competition, 2009

## PRESENTATIONS

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1. Morton, J., P., Abrudan, J. Karro, C. Liang , Sequence classification of homopolymer emissions (SCOPE), IEEE 2nd International Conference on Computational Advances in Bio and Medical Sciences ICCABS 2012, Las Vegas, NV, February 2012
2. Morton, J., J. Karro, C. Liang, A novel approach for identifying poly(A) tails in raw cDNA sequence data using General Hidden Markov Models, Genome Informatics Cold Spring Harbor, NY, November 2011.
3. Morton, J., C., Liang, and J. Karro. scrapplusplus – SCRAP Sequence Cleaning and Removal of Adapter Sequences using Profile HMMs Google Project Hosting. Retrieved from <http://code.google.com/p/scrapplusplus>, 2012
4. Morton, J., J. Karro, and C. Liang. scopeplusplus – SCOPE Sequence Classification Of homoPolymer Emissions. Google Project Hosting. Retrieved from <http://code.google.com/p/scopeplusplus>, 2012
5. Morton, J., MiniUrban Challenge: An Institute of Navigation Autonomous Robot Competition, Miami University, November 2010
6. Santana, J., J. Morton, Q. Zhou, A Fuzzy Logic Approach to Extract Plasma Line Frequencies from Arecibo Incoherent Scatter Radar Measurements, Coupling, Energetics, and Dynamics of Atmospheric Regions Workshop, Boulder, CO, June 2010.
7. Morton, J., C. Meikle, K. Danielson, Dumbo: An Intelligent Lego Robot, Mini-Urban Challenge, Dayton, OH, June 2010.
8. Brezheva, D., J. Morton, C. Meikle, K. Danielson, S. Joseph, R. Morton, StarCruizer: An Intelligent Lego Robot, Mini-Urban Challenge, Dayton, OH, June 2009