

# Bernardo Aurelio Gonzalez Torres

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

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Theoretical Machine Learning and Optimization

## EDUCATION

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| 2016 - Present | <b>Ph.D. in Computer Science</b> , University of California Santa Cruz, USA<br>Advisor: Prof. Yang Liu<br>GPA: 4.0/4.0<br>Relevant Coursework: <i>Probability Theory, Real Analysis, Machine Learning, Advanced Machine Learning, Analysis of Algorithms</i>   |
| 2014 - 2016    | <b>M. Sc. in Computer Science</b> , Computer Research Center (CIC-IPN), Mexico<br>Advisors: Ricardo Menchaca-Mendez and Mordejai Zvi Retchkiman Konigsberg<br>Thesis: Data reduction for Machine Learning algorithms (In Spanish)<br>Relevant Coursework: <i>Discrete Mathematics, Linear Algebra, Theory of Computation, Pattern Recognition, Foundations of Machine Learning, Multi-objective Optimization, Convex Optimization</i><br>GPA: 9.6/10.0 |
| 2006 - 2012    | <b>B. Sc. in Mechatronics Engineering</b> , National Polytechnic Institute (IPN), Mexico<br>GPA: 9.05/10.00<br>Rank 1/120  |

## RESEARCH EXPERIENCE

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| Oct 2018 - Present | <b>Graduate Student Researcher</b><br><i>UC Santa Cruz, USA</i><br>Advisor: Prof. Yang Liu<br>Robustness and Generalization in Machine Learning:<br>We are exploring the connection between generalization and robustness for learning algorithms.  |
| Summer 2018        | <b>Machine Learning Research Intern</b><br><i>Bosch Center for Artificial Intelligence, Sunnyvale, USA</i><br>Mentors: Jeff Irion<br>Distributed Optimization for HD-Maps (Graph SLAM Optimization):<br>Worked on the Graph SLAM problem for generating high-definition maps which are used for autonomous driving. An ADMM optimization algorithm for the Graph SLAM problem was formulated and implemented. |

Summer 2017	<p><b>Machine Learning Research Intern</b>  <i>Bosch Center for Artificial Intelligence, Palo Alto, USA</i>  Mentors: Sauptik Dhar, Jeff Irion  Robust loss functions for HD-Maps (Graph SLAM Optimization):  Worked on the Graph SLAM problem for generating high-definition maps which are used for autonomous driving. Novel edge types (using robust loss functions) were formulated and implemented in the g2o framework.</p>
Jan 2015 - May 2016	<p><b>Graduate Student Researcher</b>  <i>Computer Research Center of the National Polytechnic Institute (CIC-IPN), Mexico</i>  Advisor: Ricardo Menchaca-Mendez  Unsupervised learning algorithm for data pre-processing on large SVM problems:  We proposed a method to reduce the size of the data set used to train a SVM classifier, in order to reduce the training time and preserve the generalization error.</p>

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## SCHOLARSHIPS, HONORS AND AWARDS

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2016 - 2021	Mexican National Council for Science and Technology (CONACyT) and UC-MEXUS scholarship for Ph.D. studies
2016 - 2017	Miguel Velez fellowship for Latin American graduate students who demonstrate outstanding past academic achievement as well as future promise
2013 - 2015	Mexican National Council for Science and Technology (CONACyT) scholarship for M.Sc. studies
2012	Best student of the class of 2007-2012 in the field of Mechatronics Engineering at National Polytechnic Institute (IPN)
2007 - 2011	Telmex foundation scholarship for outstanding students for Bachelors studies
2006 - 2007	National Polytechnic Institute scholarship for the first year of Bachelor studies
2003 - 2006	National Polytechnic Institute scholarship for High School studies

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## COMPUTER SKILLS

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- *Programming languages:* Python (proficient), Matlab (proficient), Lisp (comfortable), C (comfortable)
- *Typesetting:* Latex (proficient)

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## LANGUAGES

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- Spanish (Native language)
- English (Fluent)
- German (Basic)