

# Rizal Fathony

## Education

- 2014–Present **PhD, Computer Science**, *University of Illinois at Chicago*, Chicago, Illinois, USA.  
Advisor: Prof. Brian D. Ziebart.
- 2012–2014 **MS, Computer Science**, *University of Illinois at Chicago*, Chicago, Illinois, USA.  
GPA: 3.88/4.0.
- 2003–2007 **BS, Statistical Computation**, *Institute of Statistics*, Jakarta, Indonesia.  
GPA: 3.57/4.0.

## Publication

- 2016 **Rizal Fathony**, Anqi Liu, Kaiser Asif, Brian D. Ziebart. *Adversarial Multiclass Classification: A Risk Minimization Perspective*. *Advances in Neural Information Processing Systems 29 (NIPS)*, 2016.  
Link to main paper: <https://papers.nips.cc/paper/6088-adversarial>  
Link to full paper: <http://rizal.fathony.org/pdf/fathony2016adversarial.pdf>

## Research Experience

- 2015–Present **Adversarial Prediction, Theory and Application.**

Adversarial prediction is an alternative approach to Empirical Risk Minimization (ERM) framework. Rather than optimizing a convex surrogate loss on training set as in ERM methods, it directly optimizes the desired performance measures and approximates training data. It results in a convex optimization over the Nash equilibrium of zero-sum games defined by the performance measures and the approximation of training data. My current research is mainly in the theory of adversarial prediction and also in the application of adversarial prediction for structured prediction tasks.

## Research Interest

keywords: adversarial prediction, structured prediction, risk minimization, learning theory, statistical consistency, kernel methods, game theory, convex & non-convex optimization, neural networks and deep learning.

## Honors and Awards

- 2016 NIPS Travel Award 2016.
- 2012–2014 International Fulbright Master of Science and Technology Scholarship Award.
- 2010 Runner Up Developer at Indonesia Open Source Festival - Android Apps Competition.
- 2009 Nominee of Research and Development Category at Asia Pacific Information and Communication Technology Award (APICTA), Melbourne, Australia.
- 2009 Best Research and Development Category at Indonesia Information and Communication Technology Award (INAICTA), Jakarta, Indonesia.
- 2003–2007 Grantee of a full scholarship from the Indonesian government during my undergraduate study.

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## Teaching Experience

- 2016 CS 412 Introduction to Machine Learning (Fall 2016), *UIC*, Teaching Assistant.
- 2016 CS 412 Introduction to Machine Learning (Spring 2016), *UIC*, Teaching Assistant.
- 2015 CS 491 Introduction to Machine Learning (Fall 2015), *UIC*, Teaching Assistant.

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## Work Experience

- 2016–Present **Research Assistant**, *University of Illinois at Chicago*, Chicago, Illinois, USA, Research Assistant at Prof. Brian Ziebart's lab on Adversarial Prediction research.
- 2015–2016 **Teaching Assistant**, *University of Illinois at Chicago*, Chicago, Illinois, USA, Teaching Assistant for Introduction to Machine Learning class.
- 2008–2012 **Statistical Dissemination System Developer**, *Central Bureau of Statistics*, Jakarta, Indonesia, Developed web-based statistical data dissemination and visualization systems for major surveys and censuses conducted by Central Bureau of Statistics Indonesia.

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## Project Experience

- 2016 Image Inpainting using Deep Learning  
We study several deep learning techniques such as Convolutional Neural Networks and Generative Adversarial Networks for image inpainting tasks where some blocks of images are missing. We implement the deep learning models in Lua/Torch.
- 2015 Automatic Scoring System for Short Answer Essays  
We did research on an automatic way for grading short answers of about 50 words, which features flexibilities in different ways of expression. We tried combination of different features including n-gram words, n-gram characters, essay structure features and syntactic features. The results were evaluated by quadratic weighted kappa score. The result showed that the combination of features of different aspects could help the grading system to get a better result.
- 2014 Hand Tracking Prediction  
We collected hand tracking data using Kinect and Leap Motion sensor. We developed hand tracking prediction model using particle filter algorithm and integrated it into Robotic Operating System. The code was written in Python.

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## Related Coursework

- Theory Algorithms; Approximation Algorithms; Theory of Computation.
- ML Machine Learning; Advance Machine Learning: Structured Prediction; Theory of Machine Learning; Optimization in Machine Learning and Deep Learning; Neural Networks.
- Application Natural Language Processing, Statistical Natural Language Processing, Data Mining and Text Mining, Artificial Intelligence, Applied Artificial Intelligence.

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## Programming Language Experience

- Scientific Advanced: *Julia, Matlab, Python*; Intermediate: *R, Lua*
- General Advanced: *C#, Java, Python*; Intermediate: *C, C++, Javascript*; Beginner: *Scala, Swift*
- Library Advanced: *Numpy, Scipy, Scikit-Learn*; Intermediate: *Torch*; Beginner: *Theano, Tensorflow*