

Abien Fred Agarap

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RESEARCH INTERESTS

I am broadly interested in the areas of *machine learning and deep learning*, with some interest in other computing areas such as *approximation techniques* in numerical analysis, and *algorithm complexity and computable functions* in theory of computation. This may seem evident through my publications specified below, both published (in conferences) and unpublished (in preprints).

EDUCATION

Adamson University, Manila, Philippines

- B.S. in Computer Science Nov 2013 – Mar 2018
 - Thesis: A Neural Network Architecture Combining Gated Recurrent Unit (GRU) and Support Vector Machine (SVM) for Intrusion Detection in Network Traffic Data
 - Adviser: Prof. Ryan Steven D. Caro
 - Focus: Artificial intelligence, classification, deep learning, neural network architecture.
 - Cumulative GPA: 1.72/1.00 (over-all); 1.65/1.00 (major)

Mapua University, Makati, Philippines

- B.S. in Computer Science Jul 2013 – Oct 2013

WORK EXPERIENCE

AI Pilipinas,

- Part-time Artificial Intelligence (AI) Consultant Apr 2018 – Present

Senti Techlabs, Inc.,

- Part-time Artificial Intelligence (AI) Researcher Apr 2018 – Present

Senti Techlabs, Inc.,

- Artificial Intelligence (AI) Developer Apprentice Dec 2017 – Mar 2018
 - Project: Application of Deep Learning to Sentiment Analysis
 - Supervisor: Prof. Charibeth Cheng, Head of Research
 - Focus: Artificial intelligence, classification, deep learning, natural language processing

Information Systems Security Association (ISSA), Philippines

- Android Developer Jun 2017 – Jul 2017
 - Project: Wrote a GPS-tracking Android app component for parental monitoring.
 - Supervisor: Carlo Poblete

PUBLICATIONS

CONFERENCES

- [1] A.F. Agarap, “A Neural Network Architecture Combining Gated Recurrent Unit (GRU) and Support Vector Machine (SVM) for Intrusion Detection in Network Traffic Data,” in *Proceedings of the International Conference on Machine Learning and Computing*, Macau, China, Feb 2018.
- [2] A.F. Agarap, “On Breast Cancer Detection: An Application of Machine Learning Algorithms on the Wisconsin Diagnostic Dataset,” in *Proceedings of the International Conference on Machine Learning and Soft Computing*, Phu Quoc Island, Viet Nam, Feb 2018.

PREPRINTS

- [1] A.F. Agarap, “Deep Learning using Rectified Linear Units (ReLU),” Mar 2018.
- [2] A.F. Agarap, P.M. Grafilon, “Statistical Analysis on E-Commerce Reviews, with Sentiment Classification using Bidirectional Recurrent Neural Network,” Mar 2018.
- [3] A.F. Agarap, F.J.H. Pepito, “Towards Building an Intelligent Anti-Malware System: A Deep Learning Approach using Support Vector Machine (SVM) for Malware Classification,” Dec 2017.
- [4] A.F. Agarap, “An Architecture Combining Convolutional Neural Network (CNN) and Support Vector Machine (SVM) for Image Classification,” Dec 2017.
- [5] A.F. Agarap, “Using Student Learning Based on Fluency for the Learning Rate in a Deep Convolutional Neural Network,” Mar 2017.
- [6] A.F. Agarap, “An Implementation of Euler’s Method for Solving Ordinary Differential Equations”, Dec 2016.

- [7] A.F. Agarap, “A Derivation of Mathematical Models for Rudimentary Process Scheduling Algorithms”, Dec 2016.
- [8] A.F. Agarap, “An Error Analysis on the Approximate Values of Some Mathematical Functions in the form of Maclaurin Polynomial Against the Computable Numbers”, May 2016.
- [9] A.F. Agarap, “A Mathematical Model of a Hypothetical Coin-Operating Vending Machine Designed Using Concepts in Automata Theory”, Mar 2016.

BOOKS

- [1] A.F. Agarap, “Return of the Java”, Mar 2016.
- [2] A.F. Agarap, “Easy Java”, Feb 2015.

OTHERS

- [1] A.F. Agarap, “REAVIS (Revolutionary Antivirus) – A Personal Computer System Ultimate Virus Prevention Program”, in *Intel International Science and Engineering Fair 2013*, Phoenix, Arizona, USA, May 2013.

AWARDS & SCHOLARSHIPS

- An offer of Social Impact scholarship, Hult International Business School Partial-tuition scholarship for Master of Science in Business Analytics degree. Oct 2017
- Finalist, Java Cup 2016 Feb 2016
The Annual Inter-university Java programming contest in Technological University of the Philippines (TUP).
- 2nd Runner Up, Java Code Fest Dec 2015
Java programming competition at FOSS Day in FEU Institute of Technology.
- Finalist, DLSU HackerCup 2015 Nov 2015
Hackathon hosted by De La Salle University (DLSU) Manila.
- Finalist, DOST ICT Office Oct 2015
Jeopardy Style - Capture the Flag Cyber Sea Game.
- Finalist, Hack UP 2015 Sep 2015
Hackathon hosted by University of the Philippines (UP) Diliman.
- 1st Runner Up, 2nd Intercollegiate Java Programming Contest Sep 2015
Java programming competition in Technological Institute of the Philippines (TIP).
- Finalist, Intel International Science and Engineering Fair 2013 May 2013
Part of the Philippine Team with the individual project *REAVIS (Revolutionary Antivirus) - A Personal Computer System Ultimate Virus Prevention Program*.
- Intel ISEF 2013 Candidacy, National Science & Technology Fair Dec 2012
Awarded at the Department of Education (DepEd) National Science & Technology Fair for 2012-2013.
- Intel Excellence in Computer Science, National Science & Technology Fair Dec 2012
Awarded at the DepEd National Science & Technology Fair for 2012-2013.
- Grand Award Winner, National Science & Technology Fair Dec 2012
Awarded at the DepEd National Science & Technology Fair for 2012-2013.
- 1st Place, 2012-2013 Regional Science Fair Sep 2012
Awarded by DepEd Region IV-B (MIMAROPA) at Oriental Mindoro, Philippines.
- Runner Up, 2011 Regional Invention Contest and Exhibits (RICE) Oct 2011
Awarded by Department of Science & Technology (DOST) Region IV-B (MIMAROPA).
- 1st Place, 2011-2012 Regional Science Fair Sep 2011
Awarded by DepEd Region IV-B (MIMAROPA) at Marinduque, Philippines.
- 1st Runner Up, 2010-2011 Regional Science Fair Sep 2010
Awarded by DepEd Region IV-B (MIMAROPA) at Palawan, Philippines.

ACADEMIC ACTIVITIES

- Junior Information Systems Security Association (JISSA), Adamson University**
- Vice President for Research & Development Apr 2016 – Apr 2017
 - Authored a paper on theoretical artificial intelligence [Preprint #4], where the human learning rate was posited to be used as a machine learning rate.
- Research & Development Officer Dec 2014 – Apr 2016
 - Helped in conducting seminars and workshops on information security at the university.
- Adamson Computer Science Society (ACOMSS) Coders, Adamson University**

	<ul style="list-style-type: none"> ▪ Team Lead <ul style="list-style-type: none"> • Conducted numerous seminars and workshops focusing on software engineering. 	Jan 2016 – Sep 2016
EXTERNAL AFFILIATIONS & ACTIVITIES	National Science and Engineering Fair (NSEF) Philippines, STEM Education Training Hub	
	<ul style="list-style-type: none"> ▪ Volunteer Judge 	Apr 2018
	The Search for Extraterrestrial Intelligence (SETI@Home), Berkeley Open Infrastructure for Network Computing (BOINC)	
	<ul style="list-style-type: none"> ▪ Computing Volunteer with total credit of 2,164 	May 2015 – Aug 2015
	Rosetta@Home, Berkeley Open Infrastructure for Network Computing (BOINC)	
	<ul style="list-style-type: none"> ▪ Computing Volunteer with total credit of 53 	May 2015 – Aug 2015
	Network of Intel ISEF Alumni of the Philippines (NIAP)	
	<ul style="list-style-type: none"> ▪ Associate Editor <ul style="list-style-type: none"> • Exhibitor at the 2014 DOST National Science & Technology Week (NSTW). • Gives special lectures on scientific research to pre-college students. • Mentors pre-college students on conducting their scientific researches. 	May 2013 – Present
LANGUAGES	<ul style="list-style-type: none"> ▪ English: Native language. ▪ Filipino: Native language. ▪ Spanish: basic (reading, speaking, writing). 	
SKILLS	<ul style="list-style-type: none"> ▪ Programming Languages – Python, BASH, Julia, Octave, Java, VB.NET, C#, Windows Batch File, AutoIt, C, C++, Assembly ▪ Artificial Intelligence – Artificial Neural Networks, Classification, Naive Bayes, Nearest Neighbors, Regression, Sentiment Analysis, Supervised Learning, Support Vector Machines ▪ Machine Learning & Scientific Computing Frameworks – TensorFlow, NumPy, Matplotlib, Seaborn, SciPy, Pandas, Scikit-learn, Keras ▪ Web Development – Bootstrap, CSS, Django, Flask, HTML5, GitHub Pages, JavaScript, Jekyll, PHP ▪ Computer Security – Brute-force attack, Symmetric Cryptography, Dictionary attack, SQL injection ▪ Operating Systems – GNU/Linux, Mac OS, Microsoft Windows ▪ Database Management System – MySQL, SQLite 	
TALKS	<ul style="list-style-type: none"> ▪ OpenCV: Machine Vision for Beginners at <i>Accenture Philippines</i>, May 22-23 2018. ▪ Linear Regression and Gradient Descent at <i>Machine Learning Workshop in Puerto Princesa City, Palawan</i>, April 19–20 2018. ▪ Towards Building an Intelligent Anti-Malware System at <i>Google TensorFlow Dev Summit 2018 Extended Manila</i>, April 14 2018. ▪ Deep Connect: Introduction to Deep Learning at <i>University of Santo Tomas</i>, March 03 2018. ▪ Machine Learning for Information Security at <i>Technological Institute of the Philippines</i>, February 19 2018. ▪ The Science and Engineering of Machine Intelligence at <i>University of the East</i>, September 07 2017. ▪ ACOMazing IV: The World of Linux at <i>Adamson University</i>, January 21 2017. ▪ Light through STEM: Regional Workshop on Pre-College Research in <i>Midsayap, Cotabato, Philippines</i>, with <i>US Embassy Manila</i>, January 05–07 2017. ▪ Seminar-Workshop for the Elementary and Junior High Science Research Mentors, at <i>Manila Science High School</i>, July 29–30 2016. ▪ Learning Python and Computer Security, at <i>University of the East</i>, July 16 2016. 	

- **Enhancement Seminar-Workshop on Conducting Science Investigatory Project**, at *San Pablo City Science High School, Laguna*, June 06–08 2016.
- **ComSikat II**, at *Adamson University*, January 23 2016.
- **Science Research Training Program**, at *Leuteboro National High School, Oriental Mindoro*, June 04–05 2015.
- **Seminar-Workshop in Writing Science Investigatory Project**, at *Bansud National High School–Regional Science High School for Region IV-MIMAROPA, Oriental Mindoro*, November 06–07 2014.
- **Intel ISEF Alumni Panel**, at *DepEd National Science & Technology Fair for 2013–2014*, December 04 2013.

RELEVANT COURSES

- **Online Courses (Unofficial)** – *Machine Learning* (Stanford University CS229, 2017-2018); *Convolutional Neural Networks for Visual Recognition* (Stanford University CS231n, 2017-2018); *Natural Language Processing with Deep Learning* (Stanford University CS224n, 2017-2018); *Computational Neuroscience* (University of Washington, 2017-2018); *Introduction to Mathematical Thinking* (Stanford University, 2018).
- **Short Courses** – *Python Programming Workshop* by Sony Valdez (2016); *OpenBSD Workshop* (2016); *Big Data* by Prof. Jennifer Widom (2018).

OPEN SOURCE CONTRIBUTIONS

- **Benchmark Data**, *Fashion-MNIST*, 2017.
- **Commit**, *A Practical Security Guide for Web Developers*, 2016.
- **Issue**, *Galileo*, 2016.
- **Suggestion**, *ImageScraper*, 2016.
- **Issue**, *Kivy*, 2016.
- **Issues**, *TensorFlow*, 2016.
- **Questions & Answers**, *Stack Overflow*, 2016–Present.
- **Questions & Answers**, *Ask Ubuntu*, 2016–Present.

REFERENCES

- **Ralph Vincent Regalado**
CEO & Founder
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- **Professor Charibeth Cheng**
Assistant Professor, College of Computer Studies
Senior Researcher, Center for Language Technologies
De La Salle University (DLSU)
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