

# Thanate Dhirasakdanon, Ph.D.

M: (+66) 95 472 5634 E: [dthanate@gmail.com](mailto:dthanate@gmail.com)

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## Summary & Skills

I am a versatile mathematician, programmer, engineer, data scientist with an excellent critical thinking and problem-solving skills. I also have an unquenchable thirst for continuous learning and acquiring new skills. I can do computer programming in several popular programming languages. As a Ph.D. in Applied Mathematics with postdoctoral research experience, I know how to do in-depth researches and presenting the results. I also have teaching and mentoring experiences both in academic setting and in industry.

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## Work Experience

**MAQE Bangkok Co., Ltd**

**Bangkok, Thailand**

**Data Scientist/Senior Data Scientist (July 2019 – Present)**

- **Consultant** for a Swedish SME lending platform company, Monto.ai AB (previously Capcito System AB).
- Developing a rule-based system for screening and flagging **potentially problematic** invoices for Capcito's invoice factoring service.
- Develop and maintain **data-pipelines of information** on all Swedish companies including general information and status, board of directors, payroll, annual financial reports (including accountants' comments and reservations), ownership structures between companies, share (stock) information, debt registered in the government debt collection agency.
- Develop **machine learning solutions** that help answer questions on **creditworthiness (assigning credit scores)** of potential clients using several data sources:
  - Companies' general information such as industry type,
  - Companies' key financial KPIs (financial ratios) from annual financial reports,
  - Companies' monthly payroll data,
  - Companies' unpaid debt registered in the government debt collection agency,
  - Information on companies' directors' performance histories,
  - Companies' accounting information from their ERP systems which can be used to calculate key financial KPIs in a near real-time and more granular manner.

The solutions also give credit decision makers well-calibrated **probabilities of default in the future** (within 1 year and 6 months) and are accompanied

by explanatory plots showing the impact of each calculated factor to the predicted probabilities.

The current version of our credit score outperforms the credit score from a widely used Swedish corporate credit scoring provider when applied to Capcito's own current and potential customers as measured by industry-standard **Gini coefficient** (0.83 vs 0.77).

The ultimate aim is to optimize the return from the company's loan portfolios.

- Deploying ML solutions into production environment as API microservices.
- Maintain simple model monitoring dashboards (using Python's Streamlit library) to monitor the models' performance and data drift.
- (Ongoing) Companies' short-term **cash-flow prediction** based on their historical accounting information and invoices information.
- All works are done on **AWS** cloud platform using Python's data ecosystem.

#### Senior Backend Developer (March – June 2019)

- Organized several **internal courses** at MAQE on basics of machine learning.
- Finished project: Provide **Backend API** for FWD insurance Loyalty/Reward mobile application. The work was done in Nodejs/Express.js framework.

#### Betimes Solutions Co., Ltd

Bangkok, Thailand

#### Data Scientist (December 2018 – February 2019)

- Developing a proof-of-concept machine learning system for **text classification** using data from social media (for potential use in government surveillance project).

#### Magic Code Co., Ltd.

Bangkok, Thailand

#### Senior System Analyst (April 2016 – December 2018)

- Maintaining in-house software/hardware infrastructure (git server, CI/CD server, bug tracking system, backup solution)
- Providing advice and solutions for the team, ranging from which libraries to use to the overall design of software products.
- Researching IoT product solution.
- Designing and developing web applications based on Nodejs ecosystem (Express.js and Koa.js)

#### University of Helsinki

Helsinki, Finland

#### Post-Doctoral Researcher, Department of Mathematics (May 2010 – April 2014)

- Conducting research in Mathematics and Mathematical Biology. Some coding works were done using C++.
- Teach one upper-undergraduate mathematical modelling class.

## EDUCATION

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<b>2010 2005</b>	<b>Arizona State University</b> PhD, Mathematics – Differential Eq. and Mathematical Biology MA, Mathematics	<b>Arizona, U.S.</b>
<b>2001 1997</b>	<b>Chulalongkorn University</b> M.Eng. – Electrical Engineering (Control Engineering) B.Eng. – Electrical Engineering (Control Engineering)	<b>Bangkok, Thailand</b>

## Language

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- Thai (Native)
- English (Fluent)

## Assistantship

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- 2009 – 2010, Graduate Research Associate, Arizona State University, Arizona, U.S.
- 2005 – 2008, Graduate Teaching Associate, Arizona State University, Arizona, U.S.
- 2004 – 2005, Graduate Teaching Assistance, Arizona State University, Arizona, U.S.
- 1998 – 2001, Graduate Research Assistance, Chulalongkorn University, Bangkok, Thailand

## Awards

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- 2009, Graduate Student Research Award, School of Mathematical and Statistical Sciences, Arizona State University, U.S.

## Publications: Thesis, Dissertation, and Peer-Reviewed Articles

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- **Adaptive Nonlinear Control of One-Link Flexible Robot Arm.** Master's Thesis, Chulalongkorn University, 2001. (In Thai)
- **A Model of Infectious Diseases in Amphibian Populations with Ephemeral Larval Habitat.** Doctoral Dissertation, Arizona State University, 2010.
- Armando A. Rodriguez, Richard Metzger, Jr., Oguzhan Cifdaloz, Thanate Dhirasakdanon, and Bruno Welfert. **Modelling, simulation, animation, and real-time control (MoSART) for a class of electromechanical systems: a system theoretic approach.** International Journal of Mathematical Education in Science and Technology, 35(6):877--896, 2004.
- Armando Antonio Rodriguez, Richard Metzger, Jr., Oguzhan Cifdaloz, and Thanate Dhirasakdanon. **Description of a modelling, simulation, animation, and real-time control (MoSART) environment for a class of electromechanical systems.** IEEE Transactions on Education, 48(3):359–374, August 2005. (4 citations)
- Maia Martcheva, Horst R. Thieme, and Thanate Dhirasakdanon. **Kolmogorov's differential equations and positive semigroups on first moment sequence spaces.** Journal of Mathematical Biology, 53:642--671, 2006. (1 citation)

- Thanate Dhirasakdanon, Horst R. Thieme, and P. van den Driessche. **A sharp threshold for disease persistence in host metapopulations.** Journal of Biological Dynamics, 1(4):363--378, 2007. (3 citations)
- Thanate Dhirasakdanon, Horst R. Thieme. **Persistence of vertically transmitted parasite strains which protect against more virulent horizontally transmitted strains.** In Modeling and Dynamics of Infectious Diseases (Z. Ma, Y. Zhou, J. Wu, eds.), 187--215, World Scientific, Singapore 2009. (2 citations)
- Horst R. Thieme, Thanate Dhirasakdanon, Zhun Han, Roy Trevino. **Species decline and extinction: synergy of infectious disease and Allee effect?** Journal of Biological Dynamics, 3(3):305--323, 2009. (7 citations)
- Thanate Dhirasakdanon, Horst R. Thieme. **Stability of the endemic coexistence equilibrium for one host and two parasites.** Mathematical Modelling of Natural Phenomena, 5(6):109--138, 2010. (2 citations)