

## Chatdanai Lumdee, PhD

-- A lifelong learner. Physicist and self-taught data scientist. Building skills towards advanced-tech society.

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### BIO

Chatdanai is a well-rounded optical scientist with specialization in nanophotonics. He has experiences in both experimentation and simulation aspects including optical microscopy and spectroscopy, nano-fabrication, materials characterization, hardware system control, and 3D electromagnetic simulation. His research work has produced a proven record of publications in top-tier scientific journals and presentations at international conferences.\*



He is also a proficient data analyst with skills in data analytics, machine learning, and big data technology. His data expertise leads him to join top tech firms in Southeast Asia, working across fields from banking, digital consulting, and fraud analytics. His projects cover reports and projection, prediction models, and real-time monitoring dashboards.

His fluency in optical science and data analytics offer him capabilities to collaborate efficiently in a multidisciplinary team aiming to develop innovative technology.

\*Check these links for [publications](#) and [presentations](#)

### TECHNICAL STACKS

*Optical Science:* Microscopy and spectroscopy e.g. optical, Raman, fluorescence, magneto-optical  
Fabrication e.g. thermal and e-beam deposition, colloidal lithography  
Characterization e.g. AFM, SEM, ellipsometry  
3D Electromagnetic simulation with CST Microwave Studio and Lumerical  
LabVIEW for hardware system control

*Data Analytics:* Python, PySpark, SQL, Matlab, Origin, Excel, PowerBI, Tableau, Grafana,  
Microsoft Azure, Azure Databricks

*Others:* Microsoft Office, HTML, CSS, Javascript

### EDUCATION

**Ph.D. in Optics and Photonics** 08/2010 – 12/2015  
CREOL/The College of Optics and Photonics, University of Central Florida – Orlando, Florida, USA  
GPA: 3.95/4.00

**B.Eng. in Nano-engineering** (major in Nanoelectronics) 08/2006 – 05/2010  
Chulalongkorn University – Bangkok, Thailand  
GPA: 3.91/4.00, Graduated with First Class Honors

## PROFESSIONAL & TECHNICAL EXPERIENCE (Scientific Research)

### Postdoctoral Research Scientist

04/2016 – 10/2017

Department of Physics, University of Gothenburg/Chalmers – Gothenburg, Sweden

*Research focus:* **Next Generation Data Storage Technology** (magnetoplasmonics, nanomagnetism)

*Research description:* We explored the interplay between nanoscale optics and magnetism with the aim to develop a technological platform for the next generation of data storage units (a European Union's project in EU Horizon2020 program).

- Developed a protocol to fabricate metallic nanostructure arrays with encapsulated magnetic materials – allowing optical interaction at the nanoscale without degrading magnetic properties
- Developed a protocol for rapid transfer of nanostructures to arbitrary substrates – opening new possibilities of overlaying nanostructures on samples with unusual surface topology and biological samples
- Designed and set up hardware control system using LabVIEW to automate measurement and data collection process – enabling continuous data collection without human intervention
- Performed numerical 3D electromagnetic simulation to discover underlying sources of experimental data

### Graduate Research Scientist

08/2010 – 01/2016

CREOL/The College of Optics and Photonics – Orlando, Florida, USA

*Research focus:* **Optical Interactions at the Nanoscale** (nanophotonics, surface plasmon resonances, gap-plasmons)

*Research description:* I spent my time studying how nanoscale objects and light interact. This research area is the core foundation of several emerging technologies including single-molecular sensing, surface enhanced photocatalysis, and heat-assisted magnetic recording.

- Developed new approaches to interactively control optical interaction between nanoparticles and metallic substrates e.g. effect surface roughness in nanoscale, controlled resonance shifting, enhanced photoluminescence and Raman scattering
- Designed and set up experiments to capture optical responses of single nanoparticles using microscopy and spectroscopy techniques
- Performed numerical 3D electromagnetic simulation to discover underlying sources of experimental data

## PROFESSIONAL & TECHNICAL EXPERIENCE (Data science and analytics)

### Senior Data Analyst

08/2019 – present

Fraud Analytics, Agoda (part of Booking Holdings) – Bangkok, Thailand

- **Anomaly detection and alert bot**
  - Develop an anomaly detection workflow and automate the entire flow by integrating ETL jobs, fraud prevention backend, and internal communication channel
- **Fraud prevention using machine learning models**
  - Develop machine learning models to identify bookings with high risk of fraud and shadowed the performance with fraud agents before pushing models to integrate with booking system in production
- **Fraud operation optimization**
  - Develop a workflow to evaluate on-going fraud prevention protocols with high-level summary for operation users, automate the process, and create real-time monitoring dashboards that help fraud operation team to track their performance and to have a systematic reference to reiterate fraud prevention protocols

### Data Scientist (Digital Consultant)

09/2018 – 08/2019

Applied Intelligence, Accenture Digital, Accenture – Bangkok, Thailand

- **AI supported Call Center** [Business Dev], (non-disclosure)
- **Personalized Wealth Management** [Business Dev], (non-disclosure)
- **Digital Lending**, Leading Commercial Bank in Thailand 09/2018 - 05/2019
  - Supported and automated lead selection, data processing, lead delivery – the project has acquired >100M THB of loan disbursement in 4 months
  - Developed a segmentation dashboard – transformed multi-dimensional data into easy to understand customer profiles and led to crafting of personalized messages
  - Modeling a data structure and developing a dashboard to support business planning and cost optimization using campaign's feedback – target to be available to business users for lead selection in future campaigns

### Data Scientist

11/2017 – 08/2018

KLabs, Kasikorn Business-Technology Group (KBTG) – Bangkok, Thailand

- **Personal Investment Recommendation**
  - Designed, maintained, and executed data extraction process using to feed into machine learning pipeline – reducing the amount of repetitive work performed across the team
  - Built machine learning models targeting personal investors based on their investment profile and packaged model pipeline for deployment in production – the module is one of the key features implemented as part of transformation to digital banking