Chatdanai Lumdee, PhD

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COMPETENCES:

Data science

- Excellent proficiency in data processing, analysis, and visualization using Python (Jupyter Notebook, Numpy, Pandas, Matplotlib, Seaborn, scikit-learn, etc.), Matlab, and Origin
- Knowledge in machine learning, data modeling, and validation
- Example projects (all with Python – click on links to see the projects)
  1) Building a recommender system with Python (written in Thai)
     - Describes the importance and applications of recommender systems
     - Explains the mathematical model behind recommender systems
     - Demonstrates how to create a recommender system with NumPy and Scipy
  2) Self-organizing map (written in Thai)
     - Justifies the importance and use cases of self-organizing map (SOM)
     - Elucidates the working principle of SOM using an example of clustering Pokémon
     - Provides Python code and uses the code to organize countries based on their GDP per capita and income inequality index
  3) Blockchain DIY with Python (written in Thai)
     - Justifies the concept and impacts of blockchain technology
     - Illustrates how to build a simple blockchain network
     - Demonstrates how to visualize and to create a more realistic blockchain network with reasonable assumptions
  4) An analysis on average salaries in Thailand by occupation
     - Exploits data from Bank of Thailand to find development of changes in salaries among Thai workers from year 2001 to 2016
     - Extracts underlying trends in transformation of salary growth and spending power among workers from different occupations

Optics and Photonics

- In depth knowledge in classical and nanoscale electromagnetics and electronic devices
- Hands-on experiences with advanced experiments in nano-optics and nanomagnetism
- Expert in micro- and nano-fabrication and characterization techniques
- Expert in optical experimentation and characterization techniques such as microscopy and spectroscopy
- Expert in magneto-optical measurements such as Faraday and MOKE
- Well versed in utilizing electronic equipment and optical tools such as oscilloscopes, spectrum analyzers, lasers, optical fibers, lock-in amplifiers, electromagnet, etc.
- Experienced problem solver in and system designer for advanced scientific experiments using tools such as LabVIEW

Characters and soft-skills

- Detail oriented experimentalist who formulates plan based on theories, observations, and critical thinking
- Great technical writer and presenter (Thai and English) with a proven record of publications in top-tier scientific journals and presentations at international conferences
- A team player with experiences working in multi-cultural ecosystems
- In love with learning and improving oneself and the team as well as tackling challenges

Please find my website for additional information about me e.g. blog posts and of code projects

CAREERS: Data science

Data scientist (Associate visionary architect) 11/2017 – present
Kasikorn Business-Technology Group (KBTG) – Bangkok, Thailand

Job description: …

Responsibilities: …

CAREERS: Research (check these links for publications and presentations)

Postdoctoral research scientist 04/2016 – 10/2017
Department of Physics, University of Gothenburg/Chalmers – Gothenburg, Sweden

Research topics: magnetoplasmonics, nanomagnetism

Research description: We are exploring 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).

Responsibilities:

- Fabrication and characterization (structurally, optically, and magneto-optically) of hybrid metallic-magnetic nanostructures that enhance inter-coupling between optics and magnetism
- Performing numerical simulation with Lumerical to predict and to confirm experimental observations
- Data analysis and visualization with Python to get insights, to distill, and to summarize results
- Design and optimize experiment and construct experimental control systems with Labview
- Working with collaborators from various places (on this and other side projects) e.g. Stanford University, Uppsala University, Technical University of Denmark, etc.

Graduate research scientist 08/2010 – 01/2016
CREOL/The College of Optics and Photonics – Orlando, Florida, USA

Research topics: 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.

Responsibilities:

- Optical characterization of *single* nanoparticles with various microscopy and spectroscopy techniques such as darkfield, fluorescence, and Raman scattering.
- Performing electromagnetic simulation to validate and add insights to experimental results (CST MICROWAVE STUDIO)
- Data analysis and visualization with Matlab and Origin
- Design and optimize experimental setup to improve measured data and pinpoint hypotheses
- Writing and presenting results in scientific journals and at conferences

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 SERVICES

- SPIE UCF Student Chapter President (2012–2013)
- Volunteer teaching assistant – Electronics II (EEL 4309) at UCF (Summer 2013)
- Reviewed and assisted in reviewing articles for scientific journals
  (ACS Nano, ACS Photonics, Applied Physics Letters, The Journal of Physical Chemistry)