Dr. Yinghao Chu

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* Shenzhen High-Level Overseas Peacock Talent Fellowship
* Post-doc Scholar of UC Center for Energy Research
* University of California MAE Distinguished Fellowship
* Participated in USA NSF and CEC funded projects
* 21 SCI Journals with Citations close to1000 and H-index of 15
* 7 First-authored Patents

**Education**

**University of California at San Diego (UCSD)**

Ph.D. Mechanical and Aerospace Engineering, GPA: 4.0 (2011—2015)

* MAE Distinguished Fellowship

M.S. Material Science, GPA: 4.0 (2010—2011)

**Hong Kong University of Science and Technology (HKUST)**

B.S. Applied Physics, CGA 10.25/12 (3.75 as GPA) (2006—2010)

* First Honor Graduation Award
* Shun Hing Group Scholarships Award
* Dean’s List for Six Consecutive Semesters

**Experience**

**AI Scientist & Project Tech Manager,** AIATOR Co. Ltd (2017 to present)

* Lead a team of 5 engineers, develop the core technologies focusing on AI -enhanced robots for various applications, develop & deploy deep learning based algorithm for 16 commercial projects, including **financial projects** such quantitative evaluations of investment strategy and risk control analysis for P2P individuals.
* Receive Shenzhen Startup Fund Award (450k RMB)
* 10 patents (2 PCTs)

**Post-Doc Fellow**, Center for Energy Research, UC San Diego (2015—2017)

* Collaborate with California Air Quality Management District, the largest air quality management district (27,850 square kilometers) in California, design and deploy 7 cellular solar observatories in the South Coast Basin area. Data from these are used to develop spatial network forecasting system with reduced responding time (by 80%)
* Develop a novel sky-imagery platform and associated probabilistic forecasting systems: weather classification algorithm, cloud detection model, and smart solar forecasting systems achieving forecast skills above 11%

**Research Assistant**, Coimbra Energy Group, funded by CEC & NSF, UCSD (2011—2015)

* Develop and deploy cloud detection and probabilistic forecasting systems for one CAISO observatory that saves the hardware cost by 90%
* Collaborate with Kleissl Solar Resource Assessment and Forecasting Lab, develop an AI-reforecasting system for ISEGS, the largest operational 392MW CSP plant in the world by that time, and for a 48MW PV plant of Sempra Generation achieving forecast skills over 12% against benchmark methods
* Collaborate with Meyers Biological Materials Group, study the design of a natural material and develop bioinspired high-performance material

**Publications**

* Chu, Y., Huang, C., Xie, X., Tan, B., Kamal, S., Xiong, X., (2018) “Multilayer Hybrid Deep-Learning Method For Waste Classification And Recycling” Computational Intelligence and Neuroscience, (2018), 5060875.
* Yang, Y., Guo, S., Liu, D., Li, R., & Chu, Y. (2018). “Operation optimization strategy for wind-concentrated solar power hybrid power generation system.” Energy Conversion and Management, (160), pp.243-250.
* Chu, Y., Pedro, H.T.C., Kaur, A., Kleissl, J., Coimbra, C.F.M. (2017) “Net Load Forecasts for Solar-Integrated Operational Grid Feeders.” Solar Energy (158) pp.236-246.
* Guo, S., Liu, D., Chen, X., Chu, Y., Xu, C., Liu, Q., & Zhou, L. (2017) “Model and control scheme for recirculation mode direct steam generation parabolic trough solar power plants.” Applied Energy (202) pp. 700-714.
* Guo, S., Chu, Y., Liu, D., Chen, X., Xu, C., Coimbra, C. F. M., & Liu, Q. (2017) “The Dynamic Behavior of Once-Through Direct Steam Generation Parabolic Trough Solar Collector Row Under Moving Shadow Conditions.” Journal of Solar Energy Engineering (139), pp. 041002.
* Guo, S., Chu, Y., Liu, D., Chen, X., Liu, Q., Xu, C., Guo. T. (2017) “Dynamic behavior and transfer function of collector field in once-through DSG solar trough.” Energy (121), pp. 513-523 .
* Chu, Y. and Coimbra, C.F.M. (2017) “Short-Term Probabilistic Forecasts for Direct Normal Irradiance.” Renewable Energy (101) pp. 526-536.
* Guo, S., Liu, D., Chu, Y., Chen, X., Shen, B., Xu, C., Zhou, L., and Wang, P. (2016) “Real-Time Dynamic Analysis for Complete Loop of Direct Steam Generation Solar Trough Collector.” Energy Conversion and Management (126) pp. 573-580.
* Chu, Y., Li, M., and Coimbra, C.F.M. (2016) “Sun-Tracking Imaging System for Intra-hour DNI Forecasts.” Renewable Energy (96) pp. 792–799.
* Inman, R.H., Chu, Y., and Coimbra, C.F.M. (2016) “Cloud Enhancement of Global Horizontal Irradiance in California and Hawaii,” Solar Energy (130) pp. 128–138.
* Li, M., Chu, Y., Pedro, H.T.C., and Coimbra, C.F.M. (2016) “Quantitative Evaluation of the Impact of Cloud Transmittance and Cloud Velocity on the Accuracy of Short-term DNI Forecasts,” Renewable Energy (86) pp. 1362–1371.
* Chu, Y., Li, M., and Coimbra, C.F.M. (2015) “One-Year Real-Time Operational Prediction Intervals for Direct Normal Irradiance.” AGU, San Francisco, CA.
* Chu, Y., Wang, B., Yang, W., Jung, J., Meyers, M.A., and Coimbra, C.F.M. (2015) “A Sustainable Substitute for Ivory: the Jarina Seed from the Amazon.” Nature Scientific Reports (5).
* Chu, Y., Li, M., Pedro, H.T.C., and Coimbra, C.F.M. (2015) “Real-time Prediction Intervals for Intra-hour DNI Forecasts.” Renewable Energy (83), pp. 234–244.
* Chu, Y., Pedro, H.T.C., Li, M., and Coimbra, C.F.M. (2014) “Real-time forecasting of solar irradiance ramps with smart image processing.” Solar Energy (114) pp.91-104.
* Chu, Y., Urquhart, B., Gohari, S.M.I., Pedro, H.T.C., Kleissl, J., and Coimbra, C.F.M. (2014) “Short-Term Reforecasting of Power Output from a 48 MWe Solar PV Plant.” Solar Energy (112) pp.68-77.
* Chu, Y., Nonnenmacher, L., Inman, R.H., Liao, Z., Pedro, H.T.C., and Coimbra, C.F.M. (2014) “A Smart Image-Based Cloud Detection System for Intra-Hour Solar Irradiance Forecasts.” AMS Journal of Atmospheric and Oceanic Technology (31) pp. 1996-2008.
* Quesada-Ruiz, S., Chu,Y., Tovar-Pescador, J., Pedro, H.T.C., and Coimbra, C.F.M. (2014) “Cloud-Tracking Methodology for Intra-Hour DNI Forecasting,” Solar Energy (102) pp. 267-275.
* Chu, Y., Pedro, H.T.C., and Coimbra, C.F.M. (2013) “Hybrid Intra-Hour DNI Forecasts with Sky Image Processing Enhanced by Stochastic Learning.” Solar Energy (98) pp.592-603.
* Chu, Y., Li, M., and Coimbra, C.F.M. (2013) “Quantitative Evaluation of the Impact of Ground Sensing Based Cloud Velocity Derivation on Solar Irradiance Forecast.” AGU, San Francisco, CA.

**Skills**

Solid experience in researching and conducting independent projects as PI/participants, strong skills in analytical and critical thinking, communication and team management, and academic writing and presentation

* Data-driven methodologies: hybrid artificial intelligence methods, machine-learning and deep-learning, convolutional neural network and recurrent neural network, object detection/instance segmentation, image classification and segmentation, feature engineering, Tensorflow/keras
* Computer skills: Python/MatLab/C++ Language, Excel, statistical learning, multi-dimensional time series analysis and forecast, HTML language and web design, flow visualization, image classification and processing skills
* Lab work skills: basic safety principle, mechanical property analysis, material characterization, microscopic examination, experiment design

**Representative Patents**

* Chu, Y., et al. "太阳能直射辐射强度信息预测方法和系统.", 2017101035088
* Chu, Y., et al. "物联网终端的时间序列数据处理和神经网络趋势预测方法.", 2018101084572
* Chu, Y., et al. "基于深度学习和神经网络的高偏态数据价值概率预测方法.", 201810121033X
* Chu, Y., et al. "一种自动化调参方法.", 2018104396063
* Chu, Y., et al. "基于迁移学习的焊接工艺参数推荐方法、装置及机器人. " ,2018112076565
* Chu, Y., et al. "基于神经网络的焊接工艺参数推荐方法、装置及机器人.", 2018112075558
* Chu, Y., et al. "图像处理方法、装置、电子设备和计算机可读存储介质 .", 2019103325578