

# Jianyuan Deng

✉ [jianyuan.deng@stonybrook.edu](mailto:jianyuan.deng@stonybrook.edu) | ☎ +1 (631) 202-9572 | Stony Brook NY, 11790  
[GitHub](#) | [Google Scholar](#) | [LinkedIn](#) | [ResearchGate](#)

## EDUCATION

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|--|---------------------------------|
| <b>Stony Brook University</b> , Stony Brook, New York, United States<br>Doctor of Philosophy (Ph.D.) in Biomedical Informatics, GPA: 3.9/4.0 | Aug. 2018 – Expected: Dec. 2022 |
| <b>The Chinese University of Hong Kong</b> , Hong Kong SAR, China<br>Master of Philosophy (M.Phil.) in Pharmacy, GPA: 3.7/4.0                | Aug. 2014 – Oct. 2016           |
| <b>Sun Yat-Sen University</b> , Guangzhou, China<br>Bachelor of Science (B.Sc.) in Pharmaceutical Sciences, GPA: 4.0/5.0 (Rank 1/113)        | Sep. 2010 – Jun. 2014           |

## WORK EXPERIENCE

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| <b>Intern</b> – Genentech ECDi Artificial Intelligence, South San Francisco, CA, United States | May. 2021 – Aug. 2021 |
| <b>Research Assistant</b> – The Chinese University of Hong Kong, Hong Kong SAR, China          | Nov. 2016 – Jun. 2018 |

## RESEARCH PROJECTS

|   |                       |
|---|-----------------------|
| <b>De novo Drug Design with Deep Generative and Predictive Neural Networks</b>  | Nov. 2019 - Now       |
| <ul style="list-style-type: none"><li>Implemented a deep reinforcement learning framework to design molecules with multiple desired properties</li><li>Conducted a comprehensive survey on the applications and techniques in AI-driven drug discovery</li></ul>              |                       |
| <b>Mining Electronic Health Records for Opioid Overdose Patterns and Opioid Prescriptions</b>   | Feb. 2019 - Dec. 2020 |
| <ul style="list-style-type: none"><li>Implemented Python and R scripts to process and analyze large-scale electronic health records</li><li>Designed and conducted a retrospective cross-sectional study on the temporal trends and risk factors of opioid overdose</li></ul> |                       |
| <b>Identification of Key Pharmacological Components in Drug-Drug Interactions</b>   | Nov. 2018 - Dec. 2019 |
| <ul style="list-style-type: none"><li>Implemented Python scripts to parse the DrugBank database in XML format</li><li>Designed and implemented a feature selection method to identify key features in binary classification problems</li></ul>                                |                       |
| <b>Patient Outcome Prediction based on Electronic Health Records with Deep Learning</b>   | Sep. 2018 - Jun. 2019 |
| <ul style="list-style-type: none"><li>Implemented Python scripts to retrieve medication details from RxNav APIs</li></ul>   |                       |
| <b>In Silico Drug Absorption Tract for Human Oral Drug Absorption</b>   | Aug. 2015 – Jun. 2018 |
| <ul style="list-style-type: none"><li>Developed an agent-based model (in Java) to simulate oral drug absorption with emphasis on transporters and enzymes</li></ul>   |                       |

## TECHNICAL STRENGTHS

**Skills:** Machine Learning (PyTorch, scikit-learn); Big Data Analytics (relational database); Data Visualization (ggplot2)  
**Programming Languages:** Python, R, PostgreSQL, Java

## PUBLICATIONS

- J. Deng, Z. Yang, I. Ojima, D. Samaras, F. Wang. "Artificial Intelligence in Drug Discovery: Applications and Techniques." *arXiv preprint arXiv:2106.05386*, 2021. (**Accepted to Briefings in Bioinformatics**)
- J. Deng, W. Hou, X. Dong, J. Hajagos, M. Saltz, J. Saltz, F. Wang. "A Large-Scale Observational Study on the Temporal Trends and Risk Factors of Opioid Overdose: Real-World Evidence for Better Opioids." *Drugs - Real World Outcomes*. 2021.
- X. Dong, J. Deng, S. Rashidian, K. Abell-Hart, W. Hou, R.N. Rosenthal, M. Saltz, J. Saltz, F. Wang. "Identifying Risk of Opioid Use Disorder for Patients Taking Opioid Medications with Deep Learning." *JAMIA*. 00(0), pp.1-11, 2021.
- X. Dong, J. Deng, W. Hou, S. Rashidian, R.N. Rosenthal, M. Saltz, J. Saltz, F. Wang. "Predicting Opioid Overdose Risk of Patients with Opioid Prescriptions Using Electronic Health Records Based on Temporal Deep Learning." *J Biomed Inform.* 116(2021), pp.103725, 2021.
- J. Deng, Z. Yang, Y. Li, D. Samaras, F. Wang. "Towards Better Opioid Antagonists Using Deep Reinforcement Learning." *arXiv preprint arXiv:2004.04768*, 2020.
- J. Deng, F. Wang. "An Informatics-based Approach to Identify Key Pharmacological Components in Drug-Drug Interactions." *AMIA Jt Summits Transl Sci Proc*, 2020, pp.142, 2020.
- Z. Yang, H. Xu, J. Deng, C. C. Loy and W. C. Lau. "HiQ: Robust and Fast Decoding of High-Capacity QR Codes." *IEEE Trans Image Process*, 27(12), pp.6093-6108, 2018.
- J. Deng, A. Jhandey, X. Zhu, Z. Yang, K.F.P. Yik, Z. Zuo, T.N. Lam. "In Silico Drug absorption tract: An Agent-based Biomimetic Model for Human Oral Drug Absorption." *PloS One*, 13(8), pp.e0203361, 2018.
- J. Deng, X. Zhu, Z. Chen, C.H. Fan, H.S. Kwan, C.H. Wong, K.Y. Shek, Z. Zuo, T.N. Lam. "A Review of Food-Drug Interactions on Oral Drug Absorption." *Drugs*, 77(17), pp.1833-1855, 2017.
- X. Zhu, J. Deng, Z. Zuo, T.N. Lam. "An Agent-based Approach to Dynamically Represent the Pharmacokinetic Properties of Baicalein." *AAPS J*, 18(6), pp.1475-1488, 2016.

## HONORS & SCHOLARSHIPS

- Postgraduate Scholarship - The Chinese University of Hong Kong 2014-2016
- LIU Yongsheng Outstanding Medical Student Scholarship - Sun Yat-Sen University 2013
- National Scholarship - China Ministry of Education 2011, 2012
- First-Class Scholarship - Sun Yat-Sen University 2011, 2012, 2013