David Qiu

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objective

Looking to learn computer science while applying my knowledge in quantum mechanics and chemistry.

education

University of Illinois at Urbana-Champaign **May 2020**

B.S. in Chemistry; James Scholar, Dean's List, Cum Laude (GPA: 3.92)

Relevant Coursework

- Phys. Chem. I–II, Inorg. & Org. Chem. I–II, Instrumental Char., Quant. Anal.
- Lin. Alg., Diff. Eq., Calc. I–III, Univ. Mech., E+M, Q. Mech., Num. Anal.

duPont Manual High School **May 2018**

Valedictorian, National Merit Finalist. SAT 1570/1600, ACT 35/36.

- Placed 2nd in Undergraduate Neuroscience Convention at the University of Louisville. **Apr. 2016**

research + employment

Researcher and TA, University of Illinois at U-C **Nov. 2018 – ***

- **Hirata Group, 2019–***: Furthering development of a novel stochastic technique in the evaluation of higher-order perturbation energies for very large molecular systems, termed *Monte Carlo perturbation theory*.
  - Successfully performed extensive re-factoring of existing C++ code.
  - Implementing various numerical techniques including quadrature rules, the control variates method, and the explicit RK4 method via the NumPy Python library.
  - Parsing, processing, and interpreting large sets of binary data via the NumPy and pandas Python libraries.
  - Metaprogramming scripts that automatically write and queue other job scripts to be run on the Blue Waters supercomputer at the NCSA.
- **TA for Phys. Chem. I, 2019–2020**: Taught an introductory course in quantum mechanics to 60+ junior/senior-level undergraduates with my advisor Professor Hirata.
- **Jain Group, 2018–2019**: Characterized the superionic properties of twin-domain Cu_2S nanocrystals via electronic impedance spectroscopy and furthered development of next-generation batteries.

Medical Scribe, OSF Heart of Mary Medical Center ED **May. 2019 – Jun. 2020**

- Documented medical charts for ED physicians using the Epic EMR system. Embraced learning the fundamentals of medicine in a stressful, hectic environment while building relationships with successful ED physicians.

Intern, Amprius Corporation **May – Jul. 2019**

- Wrote Python scripts for wrangling, cleaning, and processing data produced daily by the company's several automated battery cyclers. Work is MIT-licensed and exhibited on GitHub.

involvement and honors

- 2020 ACS Undergraduate Award in Physical Chemistry, Worth H. Rodebush Award **May 2020**
- Academic Chair of American Chemical Society, UIUC Chapter. **May 2019 – May 2020**
- Oliver J. Bell Merit Scholar, Homer J. and Edith M. Birch Scholar. **Aug. 2019**
- 2019 John E. Gieseking Scholar (for undergraduate research). **May 2019**
- Named ACS High Honors (Top 50 in the U.S. Chemistry Olympiad). **May 2018**

selected publications

- Qiu, David. *Investigations into Molecular Dimers via Many-body Monte Carlo Methods.* Undergraduate thesis. 2020.
- Doran, Alexander; Qiu, David; Hirata, So. *Evaluation of Non-Covalent Interaction Energies by Stochastic MBPT.* To be published. 2020.

Note: * denotes present or expected in the near future.