Arjang Talattof, Ph.D.

Software engineer. Scholar of gastrointestinal motility variation.
Building robust, scalable sytems to empower computer vision research
US Citizen and UK ILR.

EXPERIENCE

Meta **London, UK**
Research Engineer (E6) *Jan 2020 – Current*

- Developing the generation of computation at Meta RealityLabs Research.

Scape Technologies **London, UK**
Machine Learning Engineer *Aug 2017 – Jan 2020*

- Building core data flow and analysis pipeline for location-based recognition, allowing devices to see and remember their surroundings and augment the world around them. Cloud side infrastructure allows ordinary mobile devices to enhance the world around them by overlaying digital items onto the physical world, both indoors and outdoors, using machine vision and artificial intelligence.
- Acquired by Facebook January 2020

Deloitte Consulting LLP **Roslyn, VA, USA**
Senior Consultant *Aug 2016 – Jul 2017*

- Mission Analytics in Business Model and Transformation/Strategy and Operations.
- Supporting senior government executives in the development of the organization's strategy and business process; assisting in development, collection, analysis, and reporting of data by leverage big data and machine learning technologies; serving as domain knowledgeable resource in advising the Deloitte team and client on tools and techniques to improve workflow.

US Food and Drug Administration **Silver Spring, MD, USA**
Quantitative Research Fellow *Jul 2015 – Aug 2016*

- Division of Quantitative Methods and Modeling in the Office of Research and Standards within the Office of Generic Drugs.
- Applying mathematical analysis to physiological/molecular based models for drug absorption, bioavailability, distribution and effectiveness. Using large data sets to improve the prediction and regulatory decision making for generic drugs.

SKILLS

- **Languages**: Trilingial English, French, and Persian. Conversational Spanish and Italian.
- **Programming**: C, C++, Python, Rust, SQL
- **Activities**: football, hiking, photography, running

PROJECTS

- **Large-Scale Structure-from-Motion Pipeline** – *Python, C++, PyTorch, AWS, PostgreSQL, Redis*
  - Deploying and optimizing large computer vision end-to-end processing pipeline.
  - Developing and optimizing code base to improve runtime and significantly reduce costs.
  - Deep learning-based global image feature extraction and large-scale image retrieval.
  - Custom graph database deployment for geospatial image data used in pipeline to build 3D geometric models.
- **Graph Database Analytics** *Scala, Java, Cassandra/NoSQL*
  - Leveraging Cassandra and Spark (Scala) for large-scale graph networks and analyses including:
    * Building tools to explore and analyze graph data in a distributed cloud-based cluster.
    * Developing machine learning algorithms and automation of real-time entity resolution (data disambiguation) at scale.
    * Dealing with 10^7 (eventually reaching 10^9) transactions daily utilizing Kafka and Spark Streaming to ingest massive amounts of data through an ETL pipeline.
    * Revenue increase from $1.8M to $6.0M; internal investment by firm ($0.5M) to generalize new capability based on client deliverable.

EDUCATION

University of Michigan — **Ann Arbor, MI, USA**
PhD Pharmaceutical Sciences — *Sep 2009 – May 2015*

- *Mechanistic Analysis and Quantification of Gastrointestinal Motility: Physiological Variability and Plasma Level Implications*

New York University — **New York, NY, USA**
MSc Computational Biology — *Sep 2007 – May 2009*

University of Arizona — **Tucson, AZ, USA**
BSc Mathematics — *Aug 2002 – Jun 2006*

SELECTED ARTICLES IN PEER-REVIEWED JOURNALS

B. Hens, M. Corsetti, R. Spiller, L. Marciani, T. Vanuytsel, J. Tack, A. Talattof, G. L. Amidon, M. Koziolek, W. Weitschies, C. G. Wilson, R. J. Bennink, J. Brouwers, and P. Augustijns. Exploring gastrointestinal variables affecting drug and formulation behavior: Methodologies, challenges and opportunities. *International Journal of Pharmaceutics*, 519 (1-2):79–97, mar 2017a. ISSN 03785173. doi: 10.1016/j.ijpharm.2016.11.063. URL http://linkinghub.elsevier.com/retrieve/pii/S0378517316311267.

B. Hens, Y. Tsume, M. Bermejo, P. Paixao, M. J. Koenigsknecht, J. R. Baker, W. L. Hasler, R. Lionberger, J. Fan, J. Dickens, K. Shedden, B. Wen, J. Wysocki, R. Loebenberg, A. Lee, A. Frances, G. Amidon, A. Yu, G. Benninghoff, N. Salehi, A. Talattof, D. Sun, and G. L. Amidon. Low Buffer Capacity and Alternating Motility along the Human Gastrointestinal Tract: Implications for in Vivo Dissolution and Absorption of Ionizable Drugs. *Molecular Pharmaceutics*, 14(12):4281–4294, dec 2017b. ISSN 1543-8384. doi: 10.1021/acs.molpharmaceut.7b00426. URL http://pubs.acs.org/doi/10.1021/acs.molpharmaceut.7b00426.

B. Hens, A. Talattof, P. Paixão, M. Bermejo, Y. Tsume, R. Löbenberg, and G. L. Amidon. Measuring the Impact of Gastrointestinal Variables on the Systemic Outcome of Two Suspensions of Posaconazole by a PBPK Model. *The AAPS Journal*, 20(3):57, may 2018. ISSN 1550-7416. doi: 10.1208/s12248-018-0217-6. URL http://link.springer.com/10.1208/s12248-018-0217-6.

T. D. LaCount, Q. Zhang, J. Hao, P. Ghosh, S. G. Raney, A. Talattof, G. B. Kasting, and S. K. Li. Modeling temperature-dependent dermal absorption and clearance for transdermal and topical drug applications. *The AAPS journal*, 22:1–13, may 2020. doi: 10.1208/s12248-020-00451-2. URL https://doi.org/10.1208/s12248-020-00451-2.

P. Paixão, M. Bermejo, B. Hens, Y. Tsume, J. Dickens, K. Shedden, N. Salehi, M. J. Koenigsknecht, J. R. Baker, W. L. Hasler, R. Lionberger, J. Fan, J. Wysocki, B. Wen, A. Lee, A. Frances, G. E. Amidon, A. Yu, G. Benninghoff, R. Löbenberg, A. Talattof, D. Sun, and G. L. Amidon. Gastric emptying and intestinal appearance of nonabsorbable drugs phenol red and paromomycin in human subjects: A multi-compartment stomach approach. *European Journal of Pharmaceutics and Biopharmaceutics*, 129:162–174, aug 2018. ISSN 09396411. doi: 10.1016/j.ejpb.2018.05.033. URL https://linkinghub.elsevier.com/retrieve/pii/S0939641118304041.

A. Talattof and G. L. Amidon. Pulse Packet Stochastic Model for Gastric Emptying in the Fasted State: A Physiological Approach. *Molecular Pharmaceutics*, 15(6):2107–2115, jun 2018. ISSN 1543-8384. doi: 10.1021/acs.molpharmaceut.7b01077. URL http://pubs.acs.org/doi/10.1021/acs.molpharmaceut.7b01077.

A. Talattof, J. C. Price, and G. L. Amidon. Gastrointestinal Motility Variation and Implications for Plasma Level Variation: Oral Drug Products. *Molecular Pharmaceutics*, 13(2):557–567, feb 2016. ISSN 1543-8384. doi: 10.1021/acs.molpharmaceut.5b00774. URL http://pubs.acs.org/doi/10.1021/acs.molpharmaceut.5b00774.