# ALEXANDER C. FAN

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Engineer with: **(1)** R&D experience at 3 institutions + 1 company **(2)** three publications and >50 technical presentations **(3)** formal business development training and practice.

UNIVERSITY OF CALIFORNIA SAN DIEGO
**M.Eng. Bioengineering** *(2017)*
+Certification in entrepreneurship & technology commercialization

UNIVERSITY OF COLORADO BOULDER
**BS Mechanical Engineering** *(2014)*
*Degree completed in 3 years

## RELEVANT EXPERIENCE

**Academic strategic consulting project** – **Advanced Microbubble Laboratories LLC** *Mar – May 2017*
- Collaborated with team of engineers to advise medical device startup on marketing strategies.
- Conducted competitive analysis to identify the most lucrative therapeutic areas for market penetration.

**Academic operations consulting project** – **Gilead Sciences Inc.** *Feb – Mar 2017*
- Advised Gilead Oceanside's *in vitro* team on methods to boost specific productivity of antibody process.
- Individually collated and delivered a suite of analytical tools to improve process modeling and optimization.

**NSF I-Corps incubator – Salama: a bracelet to deter sexual assault in refugee camps** *Apr – Jun 2017*
- Received $5000 in funding after pitching 2nd place UC Health Hack device concept and joining startup boot camp.
- Mentored by industry professionals on customer discovery, value proposition, competitive analysis, and IP.

**CU Boulder President's Leadership Institute (PLI) TAship** *Jan – May 2014*
- Recruited by faculty to facilitate weekly recitations and writing workshops for a class of undergraduate leadership program students, providing constructive feedback on 120 essays and 36 presentations.

## RELEVANT COURSEWORK (UCSD Rady School of Management)

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|---|---|
| **Venture Mechanics:** | Business model canvas • Market segment discovery • Revenue models |
| **Enterprise Dynamics:** | Competitive advantage • Value chain structure • HR management |
| **Applied Innovation:** | Rational design of organizational structure • Guiding process and technology innovation |
| **Systems Engineering:** | System life cycles • Risk management • Process decomposition |

## SCIENTIFIC TRACK RECORD

**Tioga Research Inc. – R&D intern** *Jan – May 2017*
Goal**:** engineer a hardware solution to measure the diffusivity of drugs in mucus.
Outcome: designed, fabricated, and validated a mucosal diffusion cell with outstanding reproducibility and ease of use.
Highlights: applied extensive math modeling, liaised with custom fabrication suppliers, company is currently scaling tech.

**Optogenetics and Transgenic Technology Core at The NIH – $28K IRP fellowship** *Jun 2015 – Jun 2016*
Goal: deliver transgenes to the rat brain non-invasively using focused ultrasound.
Outcome: developed novel protocol for blood brain barrier disruption and achieved robust neuronal transfection.
Highlights: learned and applied a dozen new lab techniques, logged >400h in BSL3 facility, **published (2nd author).**

**Leung Lab at Johns Hopkins Dept. of Biochemistry and Molecular Biology** *May – Aug 2014 & Jan – May 2015*
Goal: develop protocol to induce and control the phase change of ALS-associated proteins.
Outcome: developed a high-throughput procedure for the generation of ALS protein hydrogel droplets.
Highlights: supervised 2-month rotation project for an incoming PhD candidate, **published (1st author).**

**Borden Research Lab at CU Boulder Dept. of Mechanical Engineering** *May 2012 – Dec 2014*
Goal: optimize lipid microbubble-mediated drug delivery to breast cancer cells *in vitro*
Outcome: achieved the highest molecular uptake efficiency reported in the literature for microbubble-mediated delivery.
Highlights: awarded $2000 grant for study, awarded $800 to present results at BMES 2013, **published (2nd author).**

## ANALYTICS SKILLSET

| **Statistics** | | **Optimization** | **Machine Learning** |
|---|---|---|---|
| ANOVA | Worst case error | Line search | Statistical anomaly detection |
| T-tests | Statistical error | Penalty functions | Backpropagation for neural network learning |
| Chi-squared tests | Monte Carlo analysis | Simplex search | SVM and K-means algorithms for classification |
| Regression analysis | Sensitivity analysis | Gradient descent | Collaborative filtering, low-rank matrix factorization |