

Resume Guidelines

Thayer Career Services
engineering.dartmouth.edu/careers



THAYER SCHOOL OF
ENGINEERING
AT DARTMOUTH

Resume Guidelines

A resume is a one-of-a kind professional summary that employers and recruiters use to get a grasp of your experiences, skills, interests and achievements. If written well, a resume is your ticket for that coveted interview spot. So, showcase—don't list. Be succinct—not longwinded. Take your time—don't rush. Those busy recruiters and HR managers will zip through your resume if it doesn't pique their interest. In fact, most prospective employers will spend 10-30 seconds reviewing it. To ensure that yours gets the attention it deserves, we recommend that all Thayer School students use the following guidelines.

BEFORE YOU START...

Prepare a list of *all* your experiences: work and internships, extracurricular activities, academic, research and project based experiences, and your skills and interests. Include the name of the organization, its location, your title, and the dates you were there. For each experience, explain your purpose, your task(s), and the results of your work. Think about your responsibilities. Think about the skills you used and the ones that you gained. Leave no stone unturned—you can delete extraneous details later.

LAYOUT & FORMAT

Length

Resumes should be one page, unless you are a Ph.D. student or have more than five years of work experience.

Appearance

Be consistent. Adapt the same formatting approach throughout the entire document so that it looks clean, and is easy to read. *Please do not use Microsoft Word templates to create and modify resumes.* Since these templates are designed in a table format, they are difficult to modify.

- **Margins:** 0.5" – 1"
- **Font:** Arial, Garamond, Cambria and Times New Roman are great choices.
- **Size:** 10-12 point is the norm. Your name and section headings can be larger, specifically 14-16.
- Use **Bullet Points** or **Sentences** (paragraph format) to describe key accomplishments and contributions.
- **Abbreviations:** only abbreviate states and months. If you write "Hanover, NH" for your first bullet point, do not write: "Hanover, New Hampshire" for the second. *Note:* Do not abbreviate words (e.g., pres. for president; dept. for department; intl. for international).
- **Paper:** unless you are submitting your resume online, it should be printed on resume paper. If you find yourself in a bind, we have some available in our office.

CONTENT

When describing your experiences, always begin phrases with action words (page 5 has a list). The goal here is to grab the reader's attention, and present your best skills. *Note:* Avoid nonspecific terms like "Helped", "Responsible for", and "Duties included". Don't use personal pronouns, and don't forget to use the past tense unless it's a position that you currently hold.

CATEGORIES

Thayer resumes are divided into sections (usually three to five). For example: Education, Experience, Engineering Projects, Leadership & Activities, Skills & Interests.

EDUCATION

Major Points

Include your current degree, school, major, relevant coursework and any other higher education institutions from which you have graduated (list only month and year). Include your thesis if related to the position being sought or to your career of interest.

Degrees should be listed in reverse chronological order (current degree first). If you are receiving an A.B. degree, put "Dartmouth College" as your school. For all graduate level degrees (B.E., M.E.M., M.S. and Ph.D.), write: "Thayer School of Engineering at Dartmouth College." With the exception of the Ph.D. degree, all other degrees should be spelled out:

A.B. degree

Dartmouth College, Hanover, NH

June 2015

Bachelor of Arts in Engineering Sciences modified with Biology

B.E. degree

Thayer School of Engineering at Dartmouth College, Hanover, NH

June 2015

Bachelor of Engineering concentrating in Chemical Engineering

M.S. degree

Thayer School of Engineering, Dartmouth College, Hanover, NH

March 2014

Master of Science in Engineering Sciences

M.E.M. degree

Thayer School of Engineering at Dartmouth College, Hanover, NH

November 2015

Master of Engineering Management (M.E.M.)

A collaborative program taught by faculty from the Thayer School of Engineering and the Tuck School of Business.

*** If you use the M.E.M. acronym, it should be listed after the degree is spelled out (as shown above).

Ph.D. degree

Thayer School of Engineering at Dartmouth College, Hanover, NH

March 2015

Ph.D. in Engineering Sciences

Dual degree

Thayer School of Engineering at Dartmouth College, Hanover, NH

June 2015

Bachelor of Engineering, Concentration: Electrical

Colby College, Waterville, ME

May 2014

Bachelor of Arts in Physics

Study Abroad/Summer Education/Transfer

Universidad de Belgrano, Buenos Aires, Argentina

Spring 2015

HONORS & ACCOMPLISHMENTS

List those that relevant to your major, and are well known within your field of interest or nationally (i.e., National Honor Society, Phi Beta Kappa). Make an appointment with us so we can help you determine which ones to keep.



- SAT/ACT Scores: include if you are applying for finance or consulting positions, or if the employer requests them.
- GPA: our rule of thumb is list if it's 3.0 or above.

EXPERIENCE

Show, don't tell! Avoid flowery adjectives, personal pronouns and adverbs unless ***absolutely necessary***. Instead, provide concrete examples of your work demonstrating your skills and personal attributes. A well-written resume and cover letter is a manifestation of superior writing skills.

Structuring the experience section of your resume is dependent on a two factors: what you are looking for and what you have done. Regardless of how you to decide to organize this section, you should follow these guidelines:

- All experience listings must include the organization name, your position within the organization, the location (city and state) and dates. (Month and year is preferred, although it's suitable to put the seasons and a year, or just the years as long as you have sufficient work experience.)
- When describing an experience, be as concise and interesting as possible.
- List what you've done in reverse chronological order, placing your most recent experience first and then working backwards.
- Show quantitative results when you can (e.g., "Increased efficiency by 20%" or "Cut budget by 30% in five months").

Engineering Projects

Thayer prides itself in being innovative, creative, and collaborative. Listing your engineering projects (e.g., Dartmouth Formula Racing Team) is a great way to show employers that you have the hands on skills to be a successful engineer. Describe what you've done on that specific project: your responsibilities, your findings, and the implications of your work. If you've worked under the auspices of a company sponsored project for your coursework (i.e. ENGS89/90, or ENGG390), you can mention the company sponsoring the work. Just ask for their permission first.

Include unpaid internships and volunteer work (e.g., extra hours volunteering in the machine shop) along with paid employment. Some ideas for this heading: Project-Based Experience, Academic Experience, Research Experience, and Engineering Experience.

ACTIVITIES

Most resumes contain a secondary section that lists information on your extracurricular activities. The names of this section can vary from Extracurricular Activities to Leadership & Community Service. We can help you determine the appropriate title for this section, and what to include.

SKILLS & INTERESTS

Break out skills separately into subcategories: if you have strong computer skills in administrative, creative and programming applications, create a "Software" category with your knowledge of Microsoft Office, Dreamweaver, InDesign, etc., and a "Programming" category where you list programming languages. "Language" is another popular subcategory. Keep in mind, however, that every item on your resume is fodder for a potential question from your interviewer, so be honest about what you know. Language fluency is typically categorized like so: elementary proficiency, working proficiency, professional proficiency, and native/bilingual

Don't Include:

- **Personal information:** resume writing conventions vary by country and by culture. In the U.S., it is illegal for employers to ask about your height/weight, marital status or other personal information. In the U.K., employers expect for a CV (curriculum vitae) to include age and marital status.
***NEVER list your Social Security number on your resume.
- **Citizenship status.** Generally, employers only need to know if you are legal to work in the United States, not whether you're a citizen or permanent resident. If citizenship status is critical to making a hiring decision, an employer will ask. In all cases, students should respect the qualifications requested by employers and only apply for those positions for which they are appropriately qualified. (Note: In some cases, students may wish to volunteer information about citizenship, particularly if the information is in the student's favor. See Career Services for more information.)
- **References.** Do not include a reference list with your resume unless requested by the employer. Guidelines for creating a list of references are available through our website.

REMEMBER

Your resume is a document that you have complete control of. Make it perfect, because you can. Take into account all the feedback you have received, embrace the red pen marks and distill it all down to something that feels right to you.

NEED ADDITIONAL HELP?

Schedule an appointment with Thayer School Career Services by stopping by Cummings 135, emailing Engineering.Career.Services@Dartmouth.edu, or calling 603.646.2375. We can help you with all phases of the process, from figuring out how to write your first resume to proofreading your final copy.

Action Verbs to Get You Started (looking for more: www.writeexpress.com/action-verbs.html.)

accomplished	delegated	improved	programmed
achieved	designed	initiated	projected
administered	determined	inspected	promoted
analyzed	developed	instructed	quantified
applied	devised	interpreted	recommended
assembled	directed	invented	reduced
assessed	edited	investigated	reorganized
budgeted	established	maintained	researched
calculated	estimated	measured	selected
clarified	evaluated	modelled	spearheaded
collaborated	expanded	modified	streamlined
compiled	expedited	negotiated	supervised
conducted	facilitated	operated	surveyed
consolidated	forecasted	organized	synthesized
constructed	formulated	overhauled	targeted
contracted	generated	oversaw	trained
controlled	identified	presented	troubleshoot
coordinated	illustrated	processed	updated
created	implemented	produced	verified

Skyler Jennings

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EDUCATION

	DARTMOUTH COLLEGE	Hanover, NH
June 2015	<i>Bachelor of Engineering concentrating in Mechanical Engineering GPA: 3.7/4.0</i> <ul style="list-style-type: none">• Awarded a citation for academic excellence in Environmental Engineering	
June 2014	<i>Bachelor of Arts in Engineering Sciences and Psychology, GPA: 3.59/4.0</i> <ul style="list-style-type: none">• Awarded citations for academic excellence in Machine Engineering and Ancient Egyptian Culture• Psi Upsilon Fraternity: <i>Electronics Meister</i>; manage all electronics systems of fraternity (2011-Present)• Varsity Heavyweight Crew: <i>First Boat</i>; walked on to the team as a freshman (2010-2012)• Dartmouth Outing Club: <i>Freshman Trip Leader</i>; Led group of 8 on a 3-night trip (Sept. 2010)• Dartmouth Taal: Selected for the only South Asian fusion a cappella group (2010-2014)• Splendaplum Dance Ensemble: Selected for a contemporary ballet dance troop (Summer 2012)	
Summer 2013	TUCK SCHOOL OF BUSINESS AT DARTMOUTH <i>Tuck Business Bridge Program</i> <ul style="list-style-type: none">• Attended highly selective business program; completed team-oriented valuation project of Wynn Resorts that included a financial and strategic assessment, a DCF analysis, and a final presentation to a panel of investors and MBA professors.	Hanover, NH

WORK EXPERIENCE

Summer 2014	MACLEAN-FOGG <i>Manufacturing Engineer, ESNA Division</i> <ul style="list-style-type: none">• Designed, prototyped, machined, and implemented an aerospace nut testing machine for \$20,000— half the price of outsourcing it annually, and 10% of the quoted cost to build.• Filmed, directed, and produced a James Bond themed marketing video, starring our General Manager, which highlighted the year's improvements for a corporation wide competition. The video won first place in the competition.	Pocahontas, AR
Summer 2013	THAYER SCHOOL OF ENGINEERING <i>Independent Researcher, Sponsored by Professor Vicki May</i> <ul style="list-style-type: none">• Invented proprietary technology to split, core, and bind bamboo for efficient and sustainable construction.• Designed house for Haiti relief using bound bamboo to reduce costs by 80% compared to concrete block houses.• Created informational video to market and publicize product.	Hanover, NH
Winter 2012	MASSACHUSETTS INSTITUTE OF TECHNOLOGY <i>Research Intern, Francis Bitter Magnet Lab</i> <ul style="list-style-type: none">• Co-authored scientific paper published in <i>Biochemistry</i> that modeled the bond site of drug Rimantadine to M2 virus.• Developed program to convert NMR data of the M2 protein into a 3D model of its helical structure.• Analyzed NMR spectra of the M2 protein that comprises the Influenza A virus to map out the location of its atoms.• Initiated efficiency improvement on data processing procedure by writing program in self-taught Python language to automate manual data transfer and analysis. Researched how to generate 3D structure from data with extra time saved.• Supervised lab relocation. Recommended equipment purchases. Streamlined lab layout, consolidating 3 floors into 1.• Doubled the yield of purified protein by reducing losses and combining steps. Only possible with reorganized layout.	Cambridge, MA

PROJECT EXPERIENCE

Spring 2014	COMPUTER-AIDED MECHANICAL ENGINEERING DESIGN <ul style="list-style-type: none">• Designed, machined, and fabricated a diwheel that won class competition to complete four laps around racecourse.• 3D modeled, machined using CAM, and produced an injection molded finger spork with small footprint for camping.• Designed, machined using CAM, and welded a counterbalancing wine bottle holder with bottle opener functionality.	Hanover, NH
Winter 2014	PRODUCT DESIGN <ul style="list-style-type: none">• Prototyped and machined a vacuum-blower box to clean sludge off of boots as people walk through entryways.• Developed a smart organizer application that integrates with users' syllabus and alerts users when to start tasks.• Designed, prototyped, and 3D modeled a portable PA speaker system with superior bass response in a small footprint.	Hanover, NH
Fall 2013	MACHINE DESIGN <ul style="list-style-type: none">• Designed, machined and constructed a robot that picks up balls and places them into tubes using a limited parts list.• Won class competition to collect most balls in limited time, and earned an award for meritorious performance.	Hanover, NH
Fall 2012	SOLID MECHANICS, BRIDGE DESIGN <ul style="list-style-type: none">• Designed a bridge that held most weight in engineering class competition, and failed at precisely the calculated location.	Hanover, NH
Fall 2011	INTRO TO PRODUCT DESIGN, INVENTED SEAT SLING <ul style="list-style-type: none">• Developed, prototyped, and fabricated a marketable product to assist elderly with getting out of chairs and cars.• Conducted market research with target consumers to inform design.	Hanover, NH

SKILLS AND INTERESTS

Machining Skills: 3 axis milling, 2 axis lathing, CAM, laser cutting, 3D printing, injection molding, welding, plasma cutting
Computer Skills: SolidWorks CSWA certified, SolidWorks composer, C++, MATLAB, Photoshop, iMovie, PowerPoint
Community Service: Prouty cancer fundraiser; built church in Honduras (Speak Spanish); reconditioned school in India

Savannah Teller

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EDUCATION

Dartmouth College
Hanover, NH
June 2016

- Bachelor of Arts in Biomedical Engineering modified with Public Policy
- Major GPA: 3.43/4.00
- Relevant coursework: Systems, Differential Equations, Genetics, Biochemical Engineering and Biotechnology, Philosophy of Law, Economics of Policymaking
- Computer skills: MATLAB, C Programming, SolidWorks, Excel, R, Stata, Photoshop
- Language skills: Fluent in French and Tamil

Needham High School
Needham, MA
June 2012

- Relevant coursework: Physics, French, US Government, Physiology, Studio Art
- Awards: Boston Scholastic Art Awards Portfolio Gold Key, RIT Innovation & Creativity Award, Tuttle Memorial Pallavi Vocal Competition - 2nd Place

RELEVANT EXPERIENCE

Dartmouth College
Hanover, NH
Research Scholar
March 2014-present

- Work on project with Professor Solomon Diamond at the Thayer School of Engineering on multimodal brain imaging device using magnetic nanoparticles.
- Create MATLAB simulation of proposed device, and write technical report outlining construction and results of MATLAB simulation.
- Help write grant proposals to NSF and other agencies for funding of project.

Thayer School of Engineering
Hanover, NH
Teaching Assistant
March-June 2014

- Project-based design course: Intro to Engineering.
- Guided a group of students through the design process, writing technical reports, giving effective presentations, and building final prototype of designed device.
- Met regularly with group to manage short and long term goals for the project; mediated issues relating to group dynamic.

Northeastern Young Scholars Program
Northeastern University
Boston, MA
Research Scholar
June-August 2011

- Created 3-Dimensional models of standard single point and quad point canes using SolidWorks and analyzed models using finite element analysis.
- Explored the areas of stress in the knee due to loading with Abaqus
- Interpreted data in the context of knee osteoarthritis.
- Designed and presented research poster and PowerPoint in Young Scholar research exhibition.
- Research sponsored by the National Science Foundation.

ADDITIONAL EXPERIENCE

Thayer School of Engineering
Hanover, NH
Tour Guide
June 2014-present

- Lead tours for prospective Thayer School students and families.
- Present different facets of the Thayer School curriculum and facilities to encourage application to Dartmouth College.

South Indian Classical Singing Instructor
January 2013-present

- Instruct 5-year-old girl in South Indian classical (Carnatic) music.
- Develop lesson plan for each class.
- Foster nurturing learning atmosphere in lessons.

LEADERSHIP & ACTIVITIES

Dartmouth Decibelles A Cappella Group
Business Manager
September 2012-present

- Communicate with venues to coordinate shows and raise funds.
- Serve as treasurer of group; draft and handle the budget.
- Work with other executive officers to make decisions relating to group dynamic, funds, and other issues that arise.

James P. Dean

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www.linkedin.com/pub/james-dean/a4/90/2ab



Mobile: (207) 237 – 3569

EDUCATION

Thayer School of Engineering, Dartmouth College, Hanover, NH

June 2015

Bachelor of Engineering, *Concentration:* Electrical

GPA 3.72/4.0

Colby College, Waterville, ME

May 2014

Bachelor of Arts in Physics with Departmental Honors, *Minor:* Music

GPA 3.82/4.0

Relevant Coursework:

Digital Design, Machine Learning, Microprocessors, Quantum Mechanics, Discrete and Probabilistic Systems, Electrodynamics, Fourier Transforms, Engineering Design Methodology, Communications Systems, Control Theory

RESEARCH

Medical Imaging, *Thayer School of Engineering*, Hanover, NH

Summer 2014 – Fall 2014

- Designed an embedded system that images cherenkov emissions to determine a patient's dose during radiation therapy
- Programmed image acquisition and processing in LabVIEW, networked GigE vision cameras, and built camera mounts
- Implemented system on National Instruments hardware running an RTOS and programmed processing on an FPGA

Quantum Biophysics, *Colby College Physics Department*, Waterville, ME

Fall 2013 – Spring 2014

- Modeled energy transfer in light harvesting complexes to find conditions at which long-lived quantum coherences occur
- Programmed simulation in Mathematica and analyzed large data sets with automatic curve fitting algorithms
- Published research in The Journal of Chemical Physics and wrote an Honors Thesis

Atomic Physics, *Colby College Physics Department*, Waterville, ME

Summer 2012/13

- Improved the long-term stability of diode lasers used to excite Rydberg states in super-cold potassium atoms
- Analyzed data and built diode lasers, analog control circuits, and optical circuits

EXPERIENCE

Machine Shop TA, *Thayer School of Engineering*, Hanover, NH

Fall 2012 – Spring 2013

- Instructed safe machine shop practices and developed skills on lathes, mills, CAD, laser cutters, and 3D printing

Radio Station Manager, *WMHB Colby College Radio*, Waterville, NH

Summer 2012/13

- Interviewed touring bands and scheduled radio shows for student and community DJ's
- Managed the station budget, networked with record labels, and maintained the radio broadcast

Guitarist/Band Manager, *Beyond the Gates (Progressive Metal)*, New England

Spring 2010 – Summer 2012

- Organized band practices, booked shows around New England, and composed and recorded original music

DARTMOUTH ACADEMIC PROJECTS

Embedded Network Gateway, *Engineering Design Methodology (group of 4)*

Fall 2014 – Present

- Consult Solaflect Energy on an embedded system design that allows Solaflect to remotely monitor their solar trackers
- Develop a low-cost network gateway prototype with an industrial temperature range and RS-485 and IP interfaces
- Program and test software in python and implement on hardware platforms running Linux and RTOS environments

Beat Matrix, *Digital Design (group of 2)*

Spring 2013

- Built a device consisting of a 4x8 push button array which allowed users to compose simple melodies
- Designed a digital system that reads data from the button array and outputs the corresponding melody to speakers
- Programmed our design in VHDL and implemented it on an FPGA

Interactive Sound Art, *Advanced Sound Design (group of 2)*

Fall 2012

- Created an interactive sound sculpture of a flower whose petals could be opened to play different sounds
- Designed sounds in Max/MSP and controlled the system using an arduino reading data from the environment

HONORS

- Phi Beta Kappa (Φ BK) Honors Society and Sigma Pi Sigma (Σ ΠΣ) Physics Honors Society
- Composed aBig Band Jazz Piece that won Colby's Ermanno Comparetti Music Prize

SKILLS AND INTERESTS

- **Programming:** Matlab, Python, LabVIEW, VHDL, \LaTeX , Mathematica, C/C++, and Assembly
- **Digital Electronics:** FPGAs, Microprocessors, Single Board Computers, and Digital Design
- **General Skills:** Machine Shop, Soldering, Signal Processing, Analog Electronics, and Optics
- **General Interests:** Skiing, Composing Music, Chess, Ultimate Frisbee, Trail Running

AMY ADAMS

ACADEMIC PROFILE

Thayer School of Engineering at Dartmouth College, Hanover, NH 2012 – Present

Master of Engineering Management (M.E.M.) Candidate, Dec '13; Grades: 11.5 out of 14 credits are High Passes (equivalent to an A or A-)

A collaborative program taught by faculty from the **Thayer School of Engineering** and the **Tuck School of Business**.

Courses: Internet Bus. Strategy, Marketing, Entrepreneurship, Leadership, Optimization, Stats, Ops, Finance, and Mobile Programming.

UCLA (University of California, Los Angeles), Los Angeles, CA

2007 – 2012

B.S. in Computer Science & Engineering '12; Dean's Honor List; GPA: 3.57/4.00

Courses: Technology Management and Economics, Web Applications, Algorithms & Complexity, Programming Languages

International Baccalaureate Diploma, Fullerton, CA

2007

EXPERIENCE

TripAdvisor LLC *Product Manager Intern*, Newton, MA

June 2013 – Aug 2013

- Created solution producing a 35% increase in conversion by decreasing consumer conversion time on TA's Vacation Rental product. This feature aims at removing the number of obstacles and clicks needed to produce a conversion event.
- Analyzed, investigated, and proposed solutions for keywords not currently being optimized for by performing SEO keyword search and analysis. Solutions are projected to increase traffic by 20%. Phase 3 is currently in development.
- Worked with UX designers, engineers, and data analysts to take 6 new features through the development lifecycle from conception to completion within a 3-month period.

Tuck School of Business at Dartmouth College *Research Assistant under Professor Tim Robbins*, Hanover, NH

Jan 2013 – Oct 2013

- Collaboratively developed strategy theories and ideas for Professor Robbins new book on the future of the digital world.
- Initiated and managed Professor D'Aveni's e-mail marketing campaign. Sourced 5,000 contacts by manipulating HTML using Python and CSV files. Coordinated 4 other employees while pursuing this effort.

LinkedIn Corporation *Project Manager Intern*, Mountain View, CA

June 2012 – Aug 2012

- Will save LinkedIn \$800k a year; enabled Operations organization to scale with the business' 60% year-over-year growth by initiating and completing Phase 1 of the multi-quarter long project a month ahead of schedule.
- Negotiated and persuaded project stakeholders to commit resources for a multi-quarter long project.
- Developed communication templates utilized by all Production Operation Program Managers across LinkedIn that facilitates standardization and efficient communication of project details to stakeholders.

Cisco Systems, Inc. *Technical Intern*, Milpitas, CA

June 2011 – Sept 2011

- Examined the ROI of integrating new tools into the engineering quality team through analyzing the stakeholder requirements, business impact, resources, headcount, roadmap, and risks.

UCLA Research on Energy Efficient Algorithms *Researcher under Professor Steve Buscemi*, Los Angeles, CA

Jan 2010 – Jan 2011

- Analyzed and tested data output from newly created matching algorithm to determine if it will reduce energy consumption.

PREVIOUS PROJECTS

Facebook's Profitability Strategy *Tuck Strategy Principles for Internet Businesses*, Hanover, NH

Mar 2013

- Analyzed Facebook's strategy and ability to achieve a reasonable level of profitability.

Trezher *Co-Founder*, Hanover, NH

Nov 2012 – June 2013

- Assessed the initial product concept with those working in marketing and finance; investigated and validated the user and customer value proposition, target market, competition, and operational and revenue strategies for a travel scheduling website

sixdegrees *LinkedIn Intern Hackday 2012*, Mountain View, CA

Aug 2012

- Developed the UI (Java) and product concept of an Android application, which allowed users to request third degree contacts.

LEADERSHIP, HONORS, SKILLS, AND INTERESTS

Master of Engineering Management Council *VP of Professional Development*

2012 – Present

- Led the MEM program's professional development by defining the vision and initiating collaborative workshops.

Gates Millennium Scholarship *Funded by the Bill and Melinda Gates Foundation*

2007 – Present

- Nationally awarded 10-year full scholarship distinguishing leadership, scholastic achievement, and community awareness.

Upsilon Pi Epsilon (YΠE) Computer Science and **Eta Kappa Nu (HKN) Electrical Engineering Honor Societies**

2008 – 2012

California State Senate Recognition Award and **Horatio Alger Orange County Scholar**

2007

Skills: Market analysis, SEO analysis, Google Analytics, wireframing, online and social business models, Excel, C++, C, Java, Python, and MySQL.

Interests: Product strategy, UX, problem solving and leadership development.

Frank H. Pats

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EDUCATION

THAYER SCHOOL OF ENGINEERING AT DARTMOUTH COLLEGE

Hanover, NH

Ph.D. in Engineering Sciences (GPA: 4.0/4.0), fellowship support

December 2012

Technical skills developed: stochastic process modeling, Monte Carlo simulation, optimization, numerical methods, statistical data analysis and machine learning.

Finance knowledge: *Investments, Derivatives Markets, Fixed Income, Corporate Finance and Accounting*

MISKATONIC UNIVERSITY

Acton, MA

Bachelor of Science in Mathematics (GPA: 4.0/4.0), graduated with highest honor

July 2008

Von Junzt Honors Scholarship for top 5% students, selected into Honors Class of 60 students from 3500 freshmen

RESEARCH

GAME-THEORETIC NEGOTIATION BASED ON TRANSDIMENSIONAL RISK ATTITUDES

Supported by U.S. National Science Foundation

Sept 2010-Present

- Fit empirical consumption return data of 16 major countries to a statistical hierarchical model and conduct probabilistic estimation of model key parameters based on Gibbs sampling method
- Analyzing the risk attitudes of different countries towards time travel and predict their implied country-specific policies, submitted a paper to the journal of *Risk Analysis* (under review)
- Providing an automated game-theoretic negotiation mechanism for decision-makers to reach win-win agreements
- Implemented both shortest-distance and Pareto-optimal mediating proposing mechanisms with negotiation participants not knowing their utility functions but only being capable of telling preference under limited choices

AN AQUATIC SIMULATION MODEL AND ITS PARAMETER UNCERTAINTY ANALYSIS

Supported by U.S. Environmental Protection Agency

July 2009-July 2010

- Designed and coded a computational model to simulate physical and biochemical dynamics of an aquatic system
- Estimated the model key parameters by maximum likelihood method and obtained their kernel probability densities by Monte Carlo simulation, presented the paper at International Congress on Environmental Modeling and Software

MACHINE LEARNING ALGORITHMS APPLICATION

Computer Science Department, Dartmouth College

March 2009-June 2009

- Applied naïve Bayesian learning and decision tree methods to detect spam email with over 90% successful rate
- Trained a computing agent to play a board game against human agent based on a reinforcement-learning algorithm

INTERNSHIPS

BOCOM INTERNATIONAL HOLDINGS COMPANY LTD

Hong Kong

Investment bank arm of China's fifth-largest commercial bank with US\$45b market cap

June 2011-Aug 2011

Summer Associate

▪ Research Department (Beijing office)

Co-developed a passive investment strategy based on the relative strength of small-cap stock index (CSI500) to large-cap one (CSI300), created BOLL-like thresholds for signaling a holding switch between the two indexes. Achieved a 511% return rate, far exceeding CSI500 346% and CSI300 227% from Jan.2005-Feb.2010

▪ Investment Banking Department

Conducted due diligence, including building revenue and cost models and performing customer background checks. Prepared valuation materials based on comparable companies

HAITONG SECURITIES CO., LTD

Shanghai

China's second-largest public traded securities firm with over US\$18b market cap

June 2010-Aug 2010

Summer Intern, Fixed Income Division

- Worked on a market-tested credit risk rating model, applied generic algorithm to estimate parameter values, obtained a 84% consistency with a number of main domestic rating agencies
- Provided trading team with internal risk management reports, collected and analyzed macroeconomic data

SKILLS & INTERESTS

- MATLAB, R, C/C++, Java, Microsoft Office, Mac OS and Windows, passed CFA level 1
- Half-marathon runner, collector of obscure antiquities, international travelling and public speaking

Frances MacLean

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Phone: (xxx) 123-1234 • E-mail: Frances.MacLean.TH@Dartmouth.edu

EDUCATION

Thayer School of Engineering at Dartmouth College, Hanover, NH

June 2014

Ph.D. in Engineering Sciences; Concentration in Orthopaedic Biomaterials and Medical Devices

- Thesis: *Here is my title in Italics*
- Major Coursework: Biomedical Engineering, Biomaterials, Intellectual Property, Corporate Law, Corporate Finance, Materials Characterization, Optimization, Innovation, Enterprise Plan Development, Grant Writing.
- Additional courses including Intro to E-ship and Biomedical E-Ship taken through Tuck School of Business.

Bachelor of Engineering; Concentration in Biomedical Engineering

June 2009

Dartmouth College, Hanover, NH

June 2009

Bachelor of Arts in Engineering Sciences

- Completed five year program in four years
- Major Coursework: Biomaterials, Polymer Chemistry, Mechanics of Materials, Physical and Organic Chemistries, Molecular and Cellular Biology, Biotechnology, Statics and Dynamics, Product Design, Numerical Analysis, Statistics.

WORK EXPERIENCE

Dartmouth Biomedical Engineering Center, Hanover, NH

June 2014 – Present

Post-Doctoral Research Associate

- Devote 30 + hrs per week toward the preparation of manuscripts to reduce the laboratory's backlog.
- Mentor undergraduate and graduate students in orthopaedic biomaterials research.

B.B.R. Medical Innovations, Inc., Hanover, NH

July 2011 – Present

Co-founded and co-directed a medical device startup aimed at reducing healthcare associated infections.

- One of 6 teams accepted into 2012 Barris Incubator program at Tuck School of Business at Dartmouth College.
- Semi-finalist, honorable mention in Dartmouth Ventures 2013 Business Plan Competition.
- Chosen as a finalist and participated in the highly selective MassChallenge Accelerator Program.

OTHER ENGINEERING EXPERIENCE

Dartmouth Biomedical Engineering Center, Hanover, NH

May 2006 – June 2009

Designed low cost (under \$50) alternative femoral external fixation devices for third world countries.

Individual and Team Design Projects, Thayer School of Engineering

Intravenous Fluid Sterilization Device

- Collaborated with anesthesiologists to develop a novel method for disinfecting IV fluid.
- Awarded 2009 Thayer School of Engineering Corporate Collaboration Council Engineering Design Prize.

Maxillomandibular Fixation Device

- Developed a novel approach to maxillomandibular fixation following traumatic injuries to the jaw.

Nostril Sizing Ring

- Teamed with surgeons at DHMC to develop a novel tool for maxillofacial surgeries.
- Designed surgical instrument and worked through stages of testing including IRB approval.

Deep Brain stimulation

- Optimized dopamine sensing probes used for deep tissue feedback loop.
- Redesigned production method for probes to better maintain consistency across all units.

PATENTS

US D652144: *Gauge For Determining Nostril Deformity*

US 8747764: *Inline Intravenous Fluid Sterilizer*

Patent Application: *Gauge For Determining Nostril Deformity and Method For Using The Same*

PUBLICATIONS

MacLean F, Currier BH, Van Citters DW, Levine RA, Collier JP. *Oxidation and other property changes of retrieved sequentially annealed UHMWPE acetabular and tibial bearings*. J Biomed Mater Res Part B. In Press.

MacLean F, Currier BH, Levine RA, Van Citters DW. *Crosslink density, oxidation and chain scission in retrieved, highly cross-linked UHMWPE tibial bearings*. Biomaterials 2014; 35(15):4436–40.

Frances MacLean

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SELECTED WORKS IN PROGRESS

MacLean F, Carlson EM, Levine RA, Van Citters DW. *Dynamical mechanical analysis as an assay of cross-link density of orthopaedic ultra high molecular weight polyethylene*. Sent to co-authors for review on 10/3/14.

MacLean F, Currier BH, Van Citters DW, Levine RA, Collier JP. *Oxidation and other property changes of a remelted highly cross-linked UHMWPE in retrieved tibial bearings*. Sent to co-authors for review on 10/17/14.

MacLean F, Currier BH, Van Citters DW, Levine RA, Collier JP. *In vivo oxidation in remelted HXL UHMWPE acetabular bearings: A clinical concern?* Sent to co-authors for review on 10/31/14.

SELECTED PRESENTATIONS

MacLean F, Levine RA, Currier BH, Mayor MB, Van Citters DW. *In Vivo Oxidation in Remelted Highly Cross-linked Acetabular Bearings: A Clinical Concern?* 2015 AAOS Annual Meeting, Las Vegas, NV. 2015.

MacLean F, Currier BH, Van Citters DW. *Crosslink Density Changes in Retrieved, Highly Cross-Linked UHMWPE Tibial Bearings Indicate Chain Scission Corresponding to in Vivo Oxidation*. 2013 ISTA Annual Congress, West Palm Beach, FL. 2013.

Paniogue TJ, **MacLean F**, Van Citters DW. *A Method for Tribotesting of the Native Articular Surface of Retrieved Tibial Inserts*. 2013 ISTA Annual Congress, West Palm Beach, FL. 2013.

MacLean F, Currier BH, Franklin KJ, Van Citters DW, Collier JP. *Early Indications of Oxidative Degradation in Retrieved Annealed UHMWPE Bearings Resembles Gamma Sterilized Materials*. 2012 ORS Annual Meeting, San Francisco, CA. 2012.

SELECT POSTER PRESENTATIONS

MacLean F, Currier BH, Collier JP, Levine RA, Currier JH, Mayor MB, Van Citters DW. *In Vivo Oxidation and Associated Changes in Sequentially Cross-link and Annealed UHMWPE Bearings*. 2015 AAOS Annual Meeting, Las Vegas, NV. 2015.

MacLean F, Currier BH, Levine RA, Van Citters DW. *Does In Vivo Oxidation in Highly Crosslinked Acetabular Components Lead to Chain Scission?* 2014 ORS Annual Meeting, New Orleans, LA. 2014.

MacLean F, Rezhdo A, Carlson EM, Currier BH, Collier JP. *Free radical changes in retrieved sequentially annealed UHMWPE bearings suggest chemical activity*. 2014 ORS Annual Meeting, New Orleans, LA. 2014.

MacLean F, Currier BH, Levine RA, Van Citters DW, Collier JP. *Comparison of oxidation rates and effects in sequentially annealed tibial, patellar, and acetabular bearings*. 2014 ORS Annual Meeting, New Orleans, LA. 2014.

MacLean F, Heard SN, Tibbo ME, Carlson EM, Currier BH, Collier JP. *Identification of Oxidized Regions in Retrieved, Highly Crosslinked UHMWPE Bearings Using Xylene Etching*. 2013 ORS Annual Meeting, San Antonio, TX. 2013.

MacLean F, Franklin KJ, Gray LT, Kluk HL, Currier JH, Van Citters DW. *Investigating the Usefulness of the Small Punch Test in Retrieval Analysis*. 2012 ORS Annual Meeting, San Francisco, CA. 2012.

MacLean F, Currier BH, Van Citters DW. *In Vivo Crosslink Density Changes in Highly Crosslinked UHMWPE Bearings*. 5th UHMWPE International Meeting, Philadelphia, PA: Drexel University. 2011.

MacLean F, Currier BH, Van Citters DW. *Crosslink Density Measurements of Two Retrieved, Highly Crosslinked Acetabular Cups*. 2011 ORS Annual Meeting, Long Beach, CA. 2011.

SELECTED ADVISING EXPERIENCE

Women in Science Program, Dartmouth College 2011 – Present
Research advisor in an internship program seeking to encourage women to pursue science and engineering.

- Mentored 19 first and second year female students in materials science, mechanical engineering, and design projects.
- More than half of my mentees pursued engineering and all choose STEM majors.
- 7 of 15 mentees who have completed their internships chose to continue working with the laboratory.

Biomaterials Research Advising, Dartmouth College 2010 – Present

- Served as a secondary advisor for 3 graduate students and 2 senior thesis students.
- Primary research advisor for 5 undergraduate researchers leading to 10 conference poster and paper presentations.

Club Advisor: Thursday Night Salsa at Dartmouth 2010 – Present

- Assisted undergraduate student leaders in development of weekly lessons.
- Helped organize semi-annual community dances and supervised funding requests and allocation.

PROFESSIONAL AND LEADERSHIP POSITIONS

Thayer School Annual Fund Executive Committee, Dartmouth College 2014 – Present
Member, Sub-Committee for Young Alumni Class Agent Recruitment

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FIRST Lego League , Dartmouth College	2011 – Present
<ul style="list-style-type: none"> Project Judge (2011-2013) Head Referee (2014) 	
CCFA Camp Oasis Pennsylvania , Crohn's and Colitis Foundation of America	2009 – Present
<i>Volunteer. Co-director, Leaders in Training (LIT) Program</i>	
Mentored 17-year-olds transitioning from campers to counselors at a camp for kids with Crohn's disease or ulcerative colitis.	
Graduate Program Committee , Thayer School of Engineering	2010 – 2013
<i>Student Representative to the MS/PhD Planning Committee</i>	
ENGS 89/90 – Engineering Design Methodology , Thayer School of Engineering	2010 – 2012
<i>Design Review Board Member</i>	
<ul style="list-style-type: none"> Participated in design review sessions for undergraduate capstone design sequence. Evaluated projects based on design methodology, technical merit, and potential societal impact. 	
Graduate Student Council , Dartmouth College	2009 – 2011
<i>Voting Representative for the Thayer MEM/MS/PhD Programs</i>	
The Daily Dartmouth	2007 – 2008
<i>Senior Design Editor, Editorial Board Member</i>	
<ul style="list-style-type: none"> Led team of 22 layout and design editors, scheduling shifts and managing all sections. Responsible for recruiting and training new staff members. 	
Teaching Assistantships , Thayer School of Engineering	
<ul style="list-style-type: none"> <i>Teaching Assistant for ENGS 23 – Distributed Systems and Fields, Prof. Ulf Osterberg</i> <i>Section Leader, Engineering Workshops</i> <i>Teaching Assistant for ENGS 22 – Systems, Prof. B. Stuart Trembly</i> Received a citation for performance as a teaching assistant. 	Spring 2009 2008-2009 Summer 2008

AWARDS

Dean's Service Award , Thayer School of Engineering	June 2014
<i>In recognition of exceptional contributions to Thayer School, Dartmouth College or the broader world.</i>	
MassChallenge Accelerator Program , Finalist	2013
Corporate Collaboration Council Engineering Design Prize , Thayer School of Engineering	June 2009
<i>Recognizes the group with the best overall performance in the course sequence in engineering design methodology and project completion.</i>	
Eagle Scout , Boy Scouts of America	2003

PROFESSIONAL ORGANIZATIONS AND CERTIFICATIONS

Sigma Xi , Full Member	2014 – Present
American Association for the Advancement of Science , Sponsored Member	2010 – Present
Orthopaedic Research Society , Associate Member	2009 – Present
American Society of Mechanical Engineers , Student Member	2008 – Present
Fundamentals of Engineering (EIT) , NH Joint Board of Licensure and Certification	June 2009