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This is a brief document laying out my experience and vision as related to the CRO position at UMass Dartmouth.

A caring, dynamic, and experienced leader

I have a substantial record of highly effective leadership experience encompassing education, research, professional and community service.

- *Department of Mathematics leadership roles (09/2010 - now).* I took initiative since my first day of arrival at UMassD. My major departmental leadership roles include search & screen chair on my second year of arrival, department's Provost challenge / SWOT analysis chair on the third, Science Academic Council representative since 2018, AQAD Co-Chair (2017 & 2024).

- *EAS (Co)Director (09/2020 - now).* Notable achievements include: 1) expansion of EAS by two new tracks (personally proposing the Machine Learning and Data Science track), 2) strategic coordination of resources to help grow the application and enrollment of the gravity group of EAS student body, 3) an increase of total enrollment of about 50%, 4) successful advocacy toward first-ever health insurance subsidy for all doctoral students at UMassD.

- *ACCOMPLISH program founding director (09/2020 - now).* Via a major NSF grant I led a 11-person cross-college team from 8 departments in securing, the program supported 28 undergraduate students of need across STEM disciplines. This student body is expected to double by 2026. Moreover, the program advocates and executes contextualized computing pedagogy on campus.

- *CSCDR Acting Director (Spring 2022).* While being closely involved with running the CSCDR from its inception till now as part of its directorate, I was responsible for all aspects of it in Spring 2022 when Sigal Gottlieb was serving as the acting VCR. Major achievements in Spring 2022 include coordinating with the two Deans on landing two new colleagues specializing on gravity research, and expanding CSCDR by personally recruiting two current colleagues.

- *Board of trustee of an independent school (2023 - 2026).* This is a high-profile volunteer position, that went through a long vetting process, overseeing the school's $5.5M annual budget, year-round fundraising efforts, and the board configurations. The position requires a high level of confidentiality and discretion.

A successful (Math for AI + AI for Math) researcher

I have established a successful, well-funded, modern, and agile research program. With core research areas in computing, mathematical modeling, and scientific machine learning / AI, I am always eager to understand others' research and recognize cross-pollination opportunities. This knowledge foundation and keen curiosity allow me to continue accumulating knowledge and understanding for research and scholarly achievement across a broad spectrum of fields.

- *Computing- & AI-focused research funded by $1,325,246 federal grants to date as PI.* Self study in summer 2020 revealed that my NSF funding between 2012 and 2020 ranked top 4% nationally among all 1,019 applied and computational mathematicians who received NSF funds in the same period.
- *Steady doctoral output* with graduation of 5 PhD students to date. These include two of the first six graduates in the history of EAS, the largest PhD program on campus.
- *Sustainable and steady publication record* with an extended and impactful portfolio of professional outreach activities (conference organization, reviewing, panels, seminars, multi-modal international collaboration).
- *Successful pivot* from the (fundable but) more traditional computational mathematics to the more nascent AI-focused computation and modeling.
  - Pivoted effort resulted in a major NSF grant in 2022 ($296,555) on <u>Math for AI</u> which aims to leverage traditional mathematics to develop *mathematically rigorous AI.*
  - Pivoted effort led to attention-grabbing major new publications in 2023 (GPT-PINN) and 2024 (TGPT-PINN), and an increased number of doctoral and postdoctoral applications.
  - A math major trained on the new *Math for AI* effort has seen tremendous success landing multiple nationally-competitive PhD offers in Spring 2024.
  - The associated <u>AI for Math</u> pivot is well under the way involving multiple doctoral students.

A relationship builder with strong communication skills

I have a long track record of developing excellent and sustainable relationships internally and externally.

- **Internally**
  - A track record of maintaining positive and healthy relationships with administrators, faculty, staff, and students via caring engagements, thoughtful runnings of my various programs, and the frequent hands-on organization of unit/campus events.
  - A (possibly rare) CAS science member who often "**crosses the aisle**" to talk to humanity colleagues. For example, I've
    * floated ideas to start nascent programs such as computational psychiatry,

computational linguistics, etc.

* advocated for going after grant opportunities with humanities and social science.
* advertised talks such as "Understanding and Improving Democracy through Computational Social Science" (by CSSL@ CUHK).

- **Externally, with alumni.**
  - Founding organizer of the Aftermath program (2016), a platform for promoting alumni-student interactions which was the first of its kind in the department's history.
  - Active Alumni outreach leading to the only two mathematics appointments on the first-ever CAS advisory council.

- **Externally, with funding agencies and regulators.**
  - Connections with, and insight on, a wide array of federal programs obtained via securing grants through multiple agencies (AFOSR, NSF, ONR), as PI or key Co-PI.
  - Frequent review panel participation in the U.S. (NSF, ARO, AFOSR) and Canada (NSERC) have given me insight on the programs' "inner" workings.
  - Experience with compliance via the IRB applications for ACCOMPLISH, among others.

- **Externally, with other institutions and colleagues.**
  - Running semester programs and national conferences at Brown (ICERM) and Dartmouth College helped establishing a solid working relationship with the nearest Ivy League schools and an interdisciplinary NSF Math Institute.
  - Sustained relationship with the MGHPCC community nurtured from the organization of HPC Day and the New England Numerical Analysis Day (as a founding member).
  - Connections gained via placements of former students and affiliates at institutions such as NUWC, NSA, Nye Lubricants, University of Birmingham, and MIT Lincoln Laboratory.
  - A wide array of industry connections in the Boston area from my personal networks including my undergrad and graduate alumni networks.
  - Close collaborations with colleagues at institutions such MIT, Brown, University of Rhode Island, Tufts, Dartmouth College, University of Utah, George Mason University, Virginia Tech, University of South Carolina, and many international universities in France, Germany, China, Switzerland, and UK.

Select vision as CRO

Once appointed, I will work with the Provost and campus leadership team devoting myself fully to the university's mission on research, scholarship and creative work. I will strive to be:

1. A CRO that continues the recent UMassD research momentum. While having initiatives and new perspectives, I would first and foremost highly value the opportunity of learning from the successful. I would devote myself to continuing the current momentum such as supporting and growing MUST, and leveraging and nurturing our regionally and nationally unique strengths.

2. A CRO that knows and values everyone's research and connects people and stakeholders. Being down-to-earth and knowing all major research themes will allow me to identify opportunities and proceed methodically when interacting with internal and external stakeholders.

3. A CRO that values and promotes interdisciplinary work. As a CAS member who often "crosses the aisle" to talk to humanity colleagues and also somebody who interacts with all CoE and SMAST departments regularly (due to EAS, CSCDR, and ACCOMPLISH duties) and with other colleges occasionally, I am well positioned to promote interdisciplinary work on this campus.

4. A CRO that tracks the (inter)national emerging trends to lead regionally.

- Leveraging my own expertise on Data Science and AI and those from the clusters of faculty on campus to put UMassD on the map in the midst of the president's AI initiative and the governor's AI strategic task force[1]. This will be done with faculty's input and from both the workforce development (DSC-MS & EAS-PhD) perspective and the funded research aspect. The success of the new Machine Learning and Data Science EAS track that I personally developed (in attracting many applications in its first year of existence) and the pivot of my own research (to Math for AI + AI for Math) are *two of the testaments* of my acumen to identify such trends and my determination of execution once a trend is identified.

- Forming strategic alliance with nearby institutions such as the University of Rhode Island in under-developed areas that have potential on our campus such as quantum computing.

- Assembling, promoting, and publicizing Faculty Research Clusters (FRCs, e.g. AI-FRC, Life Science FRC, etc) to actively facilitate exchanges among faculty of complimentary expertise and going after emerging interdisciplinary opportunities.

5. A CRO that focuses on problem-solving and operation streamlining. I would make sure that faculty's voice are heard and work tirelessly to bring tangible changes to our day-to-day operation and to smooth hurdles for all researchers. Examples will include wider adoption of tools such as DocuSign, BonitaSoft BPM, and Google forms for signatures (of e.g. proposal routing, RA/TA recommendation, Travel applications) and information collection.

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[1]`https://ai.gov/` `https://www.mass.gov/news/governor-healey-signs-executive-ord`
`er-establishing-artificial-intelligence-ai-strategic-task-force`