

NATIONAL SCIENCE FOUNDATION
Proposal Abstract

Proposal:1936956

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Proposal Title: Convergence Accelerator Phase I (RAISE): Unpacking the Technology Career Path
Institution: University of Virginia Main Campus
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The NSF Convergence Accelerator supports team-based, multidisciplinary efforts that address challenges of national importance and show potential for deliverables in the near future.

The broader impact/potential benefit of this Convergence Accelerator Phase I project is to provide a tool for navigating career development in STEM fields. The proposed solution has the potential to impact US labor supply by addressing the increasing demand for technology talent, which has resulted from the rapid digitalization and automation of the labor market. It can help bridge the gender and diversity gaps in the high-tech industry by better equipping women and minority groups in developing a successful technology career path. The convergence of the project is based on the coordinated work of a multi-disciplinary team, bringing together expertise in market design and econometrics at the University of Virginia and the machine learning expertise and domain knowledge in the field of technical recruiting at Riviera Partners. The team will extend its collaboration to developing formal econometric models and an AI application. The combined collaborative networking of the university and the industry will facilitate broader dissemination of the designed tool and formal project results in the academic community, high tech recruiting industry, and career development forums.

This Convergence Accelerator Phase I project will comprise research and engineering effort to build an Artificial Intelligence (AI) tool for career management, targeted to help high-tech talent in STEM fields by transforming information into quantifiable data that can be analyzed and used directly in an econometric model. The goal is to characterize the long-term impact of career choices in conjunction with individual characteristics such as education, previous job experience, training, personal goals, career interests, and other components and to provide insights into the market value of various career choices. The final deliverable of the project is a web application, with an embedded econometric model, that is intended to be used by job candidates in technical fields. The proposed work will use recent advances in structural econometrics and machine learning, such as causal prediction and natural language processing, to create models that incorporate rich, but previously overlooked, data which will be analyzed in the econometric model. The tool that incorporates these causal relationships and models will assist in the planning and evaluation of career path options, such as switching careers, acquiring new skills, or taking a new position, providing more value than commonly used compensation-based job decisions.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.