

NATIONAL SCIENCE FOUNDATION
Proposal Abstract

Proposal:1937833

PI Name:Huang , Yan

Proposal Title: Convergence Accelerator Phase I (RAISE): Prepare the US labor force for future jobs in the hotel and restaurant industry: A hybrid framework and multi-stakeholder approach

Institution: University of Central Florida

Abstract Date: 08/01/19

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 of this Convergence Accelerator Phase I project will support future research and knowledge growth on Artificial Intelligence (AI) and future jobs by developing transdisciplinary methods. This project will demonstrate how to integrate advances in data mining and analytics, qualitative analysis, survey research, and visualization techniques in predicting and visualizing the impact of AI on future jobs and proposing contextual reskill training strategies. This project will provide critically needed data on the evolutionary paths of jobs, trends of job tasks, required skills and tools, and workers' adaptation capabilities in the hotel and restaurant industry, which are significantly under-represented in the public labor databases. The research team will create an online, open-access repository of the forecasting model's outputs, description of future job content and required skills, and policy recommendations. All the findings and developed training modules will be integrated into a web-based Expert Recommendation System, which allows any user to access future job task descriptions, required skills, and customized reskill training modules. The models developed in this project can also be evaluated, scaled, and applied across different industries in the future. The proposed methodology and research findings will be used to enrich undergraduate and graduate courses in hospitality management.

This Convergence Accelerator Phase I project contributes to the understanding of the intertwined relationships among AI, jobs, and workers from a spectrum of angles. This project will combine the most recent advances in deep learning, semi-structured interviews, surveys, and work-life journal data analysis in building a hybrid framework to predict the multi-dimensional impact of AI on future jobs in the HR industry. This project will also contribute to identifying various social-economic factors, family backgrounds, and personal experiences that may influence workers' adaptation capabilities. This project bridges the gap between our understanding of the workers' current conditions and customized reskilling strategies for meeting the needs of future jobs. This project will result in: (1) more complete documentation and analysis of the multi-faceted evolution of job contents influenced by AI in the HR industry (hospitality management), (2) a more complete understanding of the triangular relationships among technology, jobs, and labor force (sociology), (3) advances in heterogeneous data mining methods for human subject research (computer science and engineering), (4) an enhanced understanding of how to design effective reskilling programs in a complex system consisting of rapid technological advances, job task evolution, and individuals' backgrounds and experiences (human resources management).

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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.