Mentorship & Collaboration Database and Matching System

Brandon Ismalej
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Project Overview

- **Goal:** Build a web-based platform for academic/industry mentorship and collaboration

- **Problem:** Finding collaborators and mentors/mentees is often unstructured and time consuming

- **Solution:** A searchable, relational database that matches users based on interests and intent

Database Design

Tables:

- **`users`**: Profile information
  - Name, email, institution, department, bio, interested_in, headshot_path

- **`research_interests`**: Lookup table of interests

- **`user_research_interests`**: Many-to-many join tables
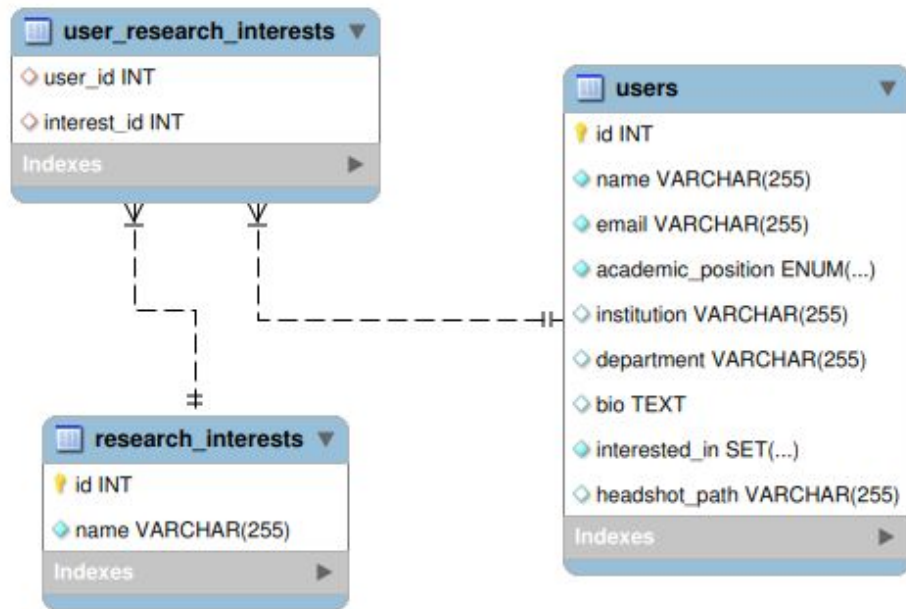
Key Features

- **Profile creation** with short bio, position/institution, & headshot
- **Selection/creation** of multiple research interests
- **Update/deletion** of profile with email
- **Search** by name, position, institution, department, interests
- **Matching** based on common interests & roles (e.g., mentee ↔ mentor)

Stack:

- Backend: Python (Flask)
- Database: MySQL
- Frontend: HTML

Technical Details

Search & Match Functionality:

- Keyword-based search using LIKE for flexible pattern matching
- Checkbox filters (e.g. position) processed into SQL IN conditions
- Matching logic to find overlapping interests and compatible roles (e.g., mentee ↔ mentor)

Mentorship & Collaboration Database

Find Matches   Search   Create Profile   Update My Profile

Sort by: Name | Institution | Interested In

Photo	Name	Position	Institution	Department	Bio	Interested In	Field/Research Interests
	Alice Lastname	Undergraduate	CSU Northridge	Computer Science	A 3rd-year undergrad hoping to join a research lab on campus	Receiving Mentorship	Natural language processing (NLP), Data visualization, Machine learning
	Carla Placeholder	Faculty	CSU Fullerton	Computer Science	PI of the data science lab looking to recruit new students!	Providing Mentorship	Natural language processing (NLP), Data mining, Augmented and virtual reality, Machine learning, Data science
	Dan Sample	Undergraduate	CSU Long Beach	Statistics	An incoming stats major looking to take part in a data science-related project	Receiving Mentorship	Statistical learning, Time series analysis, Data mining
	Frank Example	Graduate Student	CSU Sacramento	Physics	A 1st-year grad student hoping to collab with other undergrads and grad students to create a new physics club!	Collaboration	Cosmology, Quantum mechanics, General relativity
	Grace Dummy	Undergraduate	CSU Fresno	Mathematics	Hoping to start a new math club with other students, to participate in math competitions!	Collaboration	Number theory, Differential equations, Algebra
	Ivy Fakeson	Graduate Student	CSU Monterey Bay	Computer Science		Collaboration	Cluster analysis, Natural language processing (NLP), Deep learning, Unsupervised learning
	Jack Example	Industry	Oracle	Cloud Development	A seasoned dev hoping to mentor other students in gaining industry experience	Providing Mentorship	Software testing and verification, Distributed Systems, Cloud computing
	Nate Construct	Postdoc	CSU Stanislaus	Computer Science	An incoming post-doc hoping to collaborate with other grad students and faculty	Collaboration	Reinforcement learning, Explainable AI, Computer vision
	Olivia Invented	Graduate Student	CSU Dominguez Hills	Physics	A masters student hoping to take on a new project!	Receiving Mentorship	Dark matter and dark energy, Deep learning, Exoplanets
	Piper Simulation	Undergraduate	CSU San Marcos	Department of Statistics	I am an incoming transfer student looking to gain research experience in stats-related topics	Receiving Mentorship	Markov Chain Monte Carlo (MCMC), Deep learning, Statistical computing
	Quinn Demo	Faculty	CSU Northridge	Department of Computer Science	An incoming professor open to mentoring students on finding career paths!	Providing Mentorship	Natural language processing (NLP), Software engineering, Data science

Delete My Profile

Live Demonstration

Conclusion

- Created a database with web-based platform for users to search/match with other potential collaborators or mentoring relationships

Future Ideas:

- Enable automatic email sending between matched users
- Add option for users to link personal profiles (e.g. LinkedIn)