CS486C – Senior Capstone Design in Computer Science
Project Description

Project Title: Flagfriends international hosting support site
Sponsor Information: Joy Knudsen Director, Flagstaff Friends joy.danfin@gmail.com tel. 928-221 2121

Project Overview:

Coming to a foreign country is always a scary proposition, especially as a young student perhaps away from home for the first time.   The purpose of the FlagFriends organization is to support this transition by connecting incoming international students at NAU with local friends who can show them the ropes, or even a family that can welcome them into American life. It's so much easier when you have someone who can call on to explain how the banking system works, discuss how food shopping works and what choices are available, and explain transportation options!   The host persons or family benefits as well, by getting to know and interesting person and a new culture.

The way that this process currently works is extremely inefficient, unreliable, and manual effort intensive: Joy Knudsen must attend pre-semester orientation sessions, interested students (hosts and incoming internationals) must fill out paper application forms. Alternatively, this paper form can be downloaded from the existing website for printing, filling in, and mailing in.   In any case, the process is arduous, forms are often incomplete or illegible, and "matching" of host student interests is done manually by Joy, with mixed results.

The goal of this project is to streamline, enhance and improve this basic process by several orders of magnitude. In particular, the aim is to develop a sophisticated web-site that supports the entire existing process, and also explores a number of value-added features made possible by this new platform.   Specific functionalities must include:

- An account-based mechanism to allow students and sponsors to sign up for the service, in much the same way that most other webapps do this, i.e., either provide a login/passwd, or choose to login via Google or Facebook.

- Mechanisms to allow both potential sponsors and incoming international students to enter their personal and contact details, i.e., an online application form.   Rather than mimicking the current paper form, it would be more like a profile that you create on the system, much like with online dating sites. The basic profile should be fast and easy to create, with additional options to add photos, give more detailed information, etc.   The team will work with the sponsor to determine useful profile elements.

- An efficient, elegant reactive interface to search, filter, or browse (note that these are different functions!) the database to examine potential matches.   This should work for both students and hosts, but will probably be used mostly by students looking what hosts might be available.

- Allow both sponsors and students to express "preferences", i.e., constrain matches based on desirable attributes across the possible categories. This feature is most likely to be used by hosts to express their constraints/preferences with respect to things like smoking, nationality, gender; but the feature might be useful for incoming students as well. It should be possible to set notifications (e.g. by email) when a new record matching the given preferences enters the system.

- A commentary system that allows students to add their thanks and (hopefully!) kind comments to the host's profile, perhaps with a nice photo of themselves. This is meant less as formal rating system and more as a "guest book" feature that brings life into the system, and can serve to introduce potential hosts to new incoming students via commentary left by previous students.

- A meta-model that allows organizations (like FlagFriends) to create accounts and customized home pages in the system…and then open this new site up to their local community for population with hosts/guests. In this way, the site is not limited to supporting FlagFriends, but could easily host any number of other similar organizations in cities across the country and the world. It could also be used by any sort of "hosting" scenario, e.g., it could be used to match refugees coming into a certain area with suitable host families.

- Must be implemented in a modern cloud-based, fully Web2.0 framework and technology, to allow easy scalability and to support robustness. Absolute emphasis must be placed on ease of maintenance of the system by a non-technical client.

The above features should be considered a minimal outline for what the system has to do. Ultimately the team is expected to bring not only strong technical expertise but also substantial creativity to this project, to work with the client to refine the specification to create a truly useful resource.

Knowledge, skills, and expertise that will need to be learned for this project:

- Basic HTML and website design
- Expertise with one or more Web2.0 frameworks for creating polished, highly reactive web apps.
- One more web-oriented programming languages, e.g., javascript, python, etc. Depends on technologies chosen.

Equipment Requirements:

- No special equipment beyond access to functional development machines is required. Students are encouraged to use their own laptops/desktops for this, but development machines can also be provided by NAU CS programs.

Software and other Deliverables:

- A complete, functional, and well-tested Web2.0 website
- Fully documented and well-organized source code, both as an online repo and on a USB stick.
- An as-built technical document describing all technical aspects of the system from requirements to design to implementation. Should allow a future developer to easily pick up and continue the project.
- A complete user manual (hardcopy or online as part of the system) that provides simple instructions for a non-technical site administrator on how to manage the site.