Attracting Opposites

Most search applications are about similarity – about finding items or people who are similar in some way, and ranking their appearance by that similarity (amongst other things –there are also things like connection and advertising cash to take into consideration). I have a slightly different problem to solve: that of suggesting connections and forming teams between people who are complementary.

Which is a great problem to have: new turf is always exciting. But before I get too carried away, I need to look for places where this problem might already have been solved. The obvious places to look are management theory, robot team formation and autonomous agents. Each of these is focused around a goal or task that requires a set of skills, time availability, location availability etc., and includes the study of communication, coordination and cooperation between team elements. In robotics, this is autonomy theory. Multi-agent theory is also a rich ground, as is team forming (from team development models).

A lot of human team theory is about personalities and how they complement each other – the completer-finishers and plants of the [Belbin Team Inventory](#) and [group behaviour](#). We need to be aware of these (and there is much work in [community management](#) on to manage personality conflicts), but they're not the main focus of this problem.

A lot of search now includes the networks connected to an item – for instance, the pages [cited by and citing other pages](#), the [people linked by social networks](#). That gives us similarity again, which isn't what we're looking for, but the network idea is powerful and still potentially useful to us. As our system develops, we should see teams forming around ideas, and groups forming around subject areas. Perhaps we could mine those groups and the people profiles in them, to template the types of team that form around different problem types and topics. Combining that with a 'skills needed', location, tags etc template for each hunch might produce a very powerful team suggestion tool.

Which brings us to robotics. There is a [lot of work](#) (e.g. [here](#)) on team formation in multi-agent theory and autonomy. Mostly these are goal-based, an extension of things like belief-desire-intention models from single agents to multiple cooperating actors.

There are overlap areas too – like the [I-MINDS system](#) for creating student teams.

And then there's [the whole area](#) of [autonomy](#) that's dedicated to [mixed human-robot teams](#). Which is exactly what we're planning to do by creating agents (wrappers for data feeds and sniffers) as users on a par with the human users in our system.

There's a lot of work here, something worthy of at least one thesis methinks. But we have to make it work, and quickly, so the trick for now is to think about the above, and create something simple

and intuitive that 'just works'. Onwards!