SpaceTime Tag Planning

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A system for suggesting when and where individuals may be involved in similar **goals** (activities that they have specified that they would like to do).

Group Activity Planning

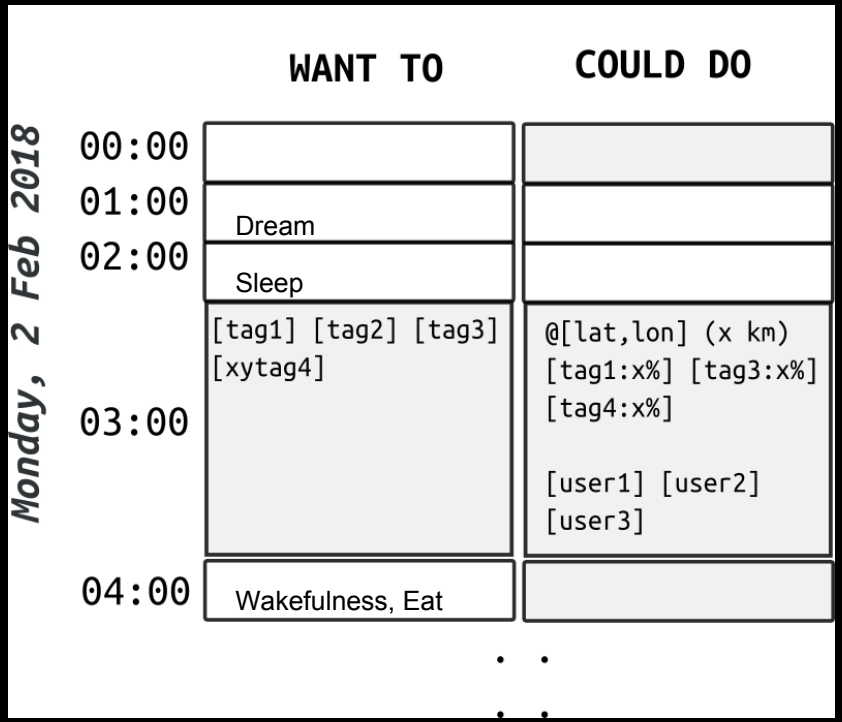
- Calendar and scheduling software applications are commonly used to plan individual and group activities.
- This system allows arbitrary **tags** to be associated with **space** and **time** locations to coordinate activity in an arbitrary large population, representing vectors of intentionality.
- Such tags are generally selected from Wikipedia (serving as a foundation ontology) and can encompass any subject - whether an activity, physical object, or abstract object.
- Populating the vector space with novel opportunities for its participants requires more than one individual user.

Collecting Goals & Generating Opportunities

Many possible user-interfaces can be designed to elicit goals from a user.

This is an hour-based timeline starting from the present moment and extending an arbitrary amount of time into the future.

The timeline can be arbitrarily subdivided into smaller time-units – the hour being an arbitrary amount of time.

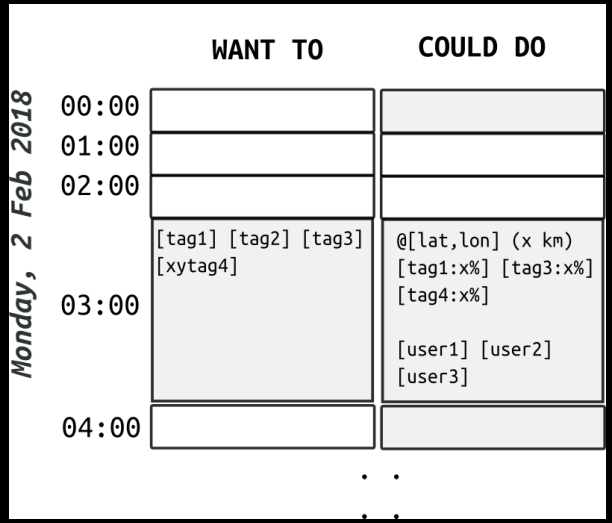


Collecting Goals & Generating Opportunities

Each moment can be described in certain aspects:

- **Want To**: what one intends to do or would like to happen, specified as a list of tags
- **Could Do**: recommendations for possible activities (opportunities), specified in terms of:
  - where (latitude/longitude coordinates)
  - when
  - with whom may be involved (users implicated)
  - what "should" occur as a semantic vector of the tags with the magnitude of its components, in the range of 0..1.0, indicating the relative strength of its presence in this vector

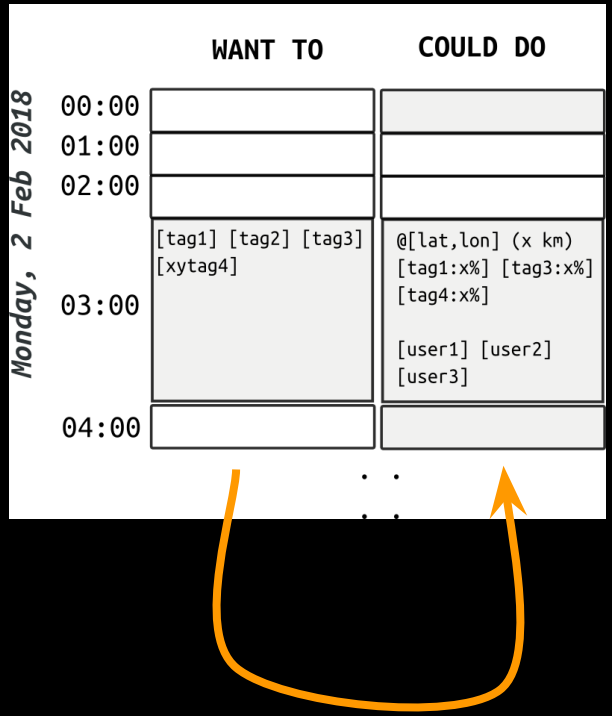
Clicking a cell in the 'Want to' column allows one to select the tags associated with that time slot, perhaps through a pop-up dialog window.



Collecting Goals & Generating Opportunities

In a multi-user system, anyone editing their 'Want to' column would automatically trigger an updating of everyone's 'Could do' column since the clustering results need updated.

These updates can be throttled to an arbitrary finite time of maximum frequency. The soonest future time slots can be calculated at a higher priority than later ones allowing near-future plans to be more adaptively and fluidly scheduled.



Goal Vector

A set of **goal vectors** (“want to”), when clustered, results in centroids which represent recommended goals (“could do”).

These N-dimensional vectors consist of the following components:

- Time (ex: unixtime)
- Geographic Latitude
- Geographic Longitude
- Geographic Altitude?
- tag0? [0: not present .. 1.0: present]
- tag1? [0: not present .. 1.0: present]
- …
- tagN? [0: not present .. 1.0: present]

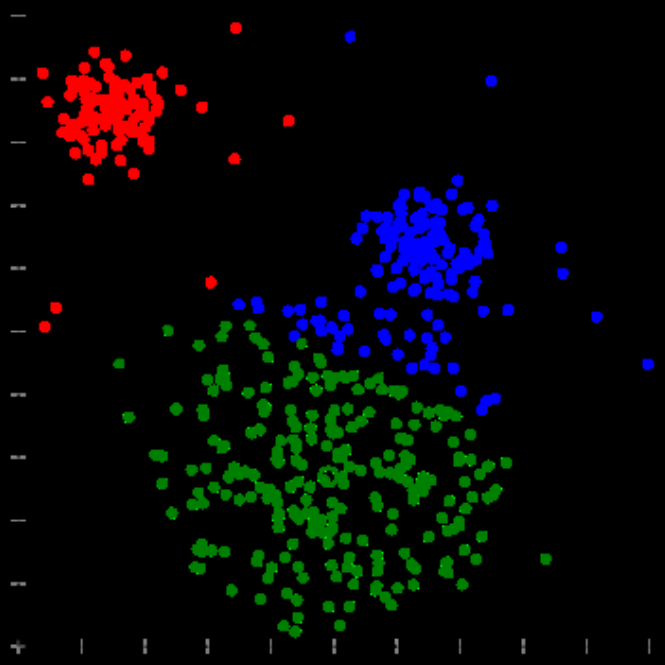
For regions of a size where the effective curvature of the planet can be considered negligible, the latitude and longitude coordinates can be interpreted as a “flat” 2D cartesian space.

The resulting centroids ***implicate*** which goals, and their authors, which are in nearest proximity.

Clustering

Various clustering methods may be applicable. K-means clustering provides results in the form of centroids in the vector space which can be interpreted as possible meetings between the users who have planned their time with this system.

The distance function between points in the vector space can be biased to favor one set of dimensions or another. For example, to cause certain aspects (space, time, or tags) to seem more or less important than others.



Partial Matches using Super-tags

- Many Wikipedia pages are tagged with the “Categories” in which it is classified. Categories can also be sub-categories of other categories.
- This forms a taxonomy that can be used to add extra tags (super-tags) to the goal vectors by including all parent categories to a finite iterative depth.
- These can be gathered from a page's wikitext or from DBpedia's “skos:broader” property.
- These additional “virtual” category tags may be assigned slightly differently strength values (within 0.. 1.0) than explicitly chosen tags.

Predicting Behavior

Another column for each time slot can show a prediction for an individual's future tags at a given time-slot, according to one's historic entries.

This can serve as a reminder system for reinforcing habits, or for eliciting responses to questions, such as psychological surveys.

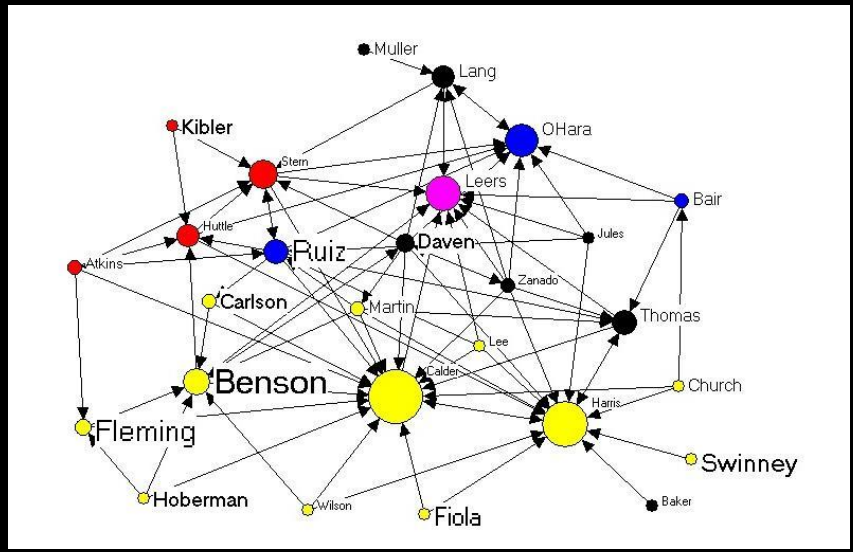
When an item is no longer desired to be remembered, one can be explicitly “forget” it via a button in the user-interface.

Space-less & Time-less Applications

- When the space dimensions are not involved, the system identifies possible on-line meetings, or other situations where space is irrelevant.
- When the time dimensions are not involved, the system identifies more-or-less permanent semantic “features” of a geographic region.
- When neither space nor time dimensions are involved, the system identifies clusters of “interests” shared by users.

Trust Networks

The “trust” level of an individual can determine the strength of its goals during calculation of suggestions, influencing the community's plans.



Trust in a network can be computed from graph analysis.

Humans can specify who they trust explicitly. Autonomous agents may compute trust from quantifiable measurements such as speed, efficiency, and reliability.

Machine Goals

Machines and objects can generate goals and follow suggestions. This can operate as a high-level planning system for robots and swarms of robots.

Examples:

- A store can generate a goal to sell items during business hours, but not while closed
- ...

Conclusion

The ubiquitous application of this system could have a significant impact in a human society's daily functioning. It can help in all forms of gathering:

- education
- conferences
- business meetings
- medical
- social
- recreational
- among animals
- among machines
- exotic forms of interactions yet to be explored

* Implications of AGI for Society, Economy and Ecology
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