

Recovering Plans from the Web

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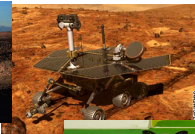
University of Cagliari, Universidad Carlos III de Madrid

SPARK Workshop ICAPS, 2009

A word cloud of project names. The word 'Sayphi' is the largest and most prominent, centered in red. Other words are scattered around it in various colors and sizes. The words include: VHPOP, GPT, Prodigy, Metric-FF, SHOP2, IxTeT, Europa, LAMA, SIADEx, CPA, HSP, SAPA, LPG, FSP, UCPOP, CPT, and GAMER.

VHPOP GPT Prodigy
Metric-FF SHOP2 IxTeT
Europa Sayphi
LAMA SIADEx
CPA HSP
SAPA LPG
FSP UCPOP CPT
GAMER

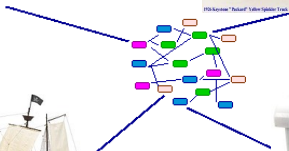
Applications?







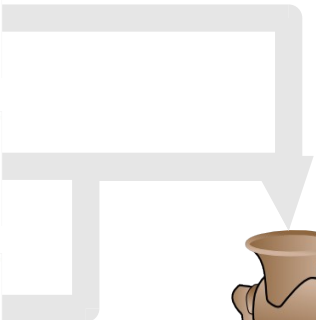
1928 Kenner "Dustall" Yellow Spill-er Truck



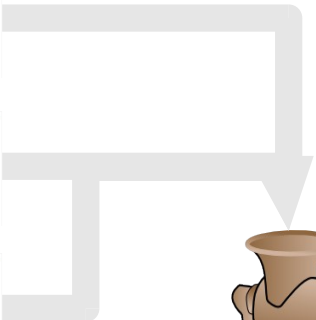
Modelling



PDDL3.0



Ontologies



PDDL3.0
plans

How to Get Your Wife/Girlfriend to Watch Sports ★

Are you tired of sitting alone on the couch watching sports? Would you like your wife or girlfriend to join you? At the very least, would you like her to stop rolling her eyes and hiding the remote control whenever a game comes on? While this article is written to address the common dilemma of men liking sports and women being not-so-enthused, all of these tips will work for an athletics-loving woman trying to get her man into the game, too. So here's how to turn sports time into quality time.



◉ Steps

[\[edit\]](#)

- 1. Choose a spot where you and your wife/girlfriend will be comfortable.** Try to avoid very loud arenas or bars where people are loud and obnoxious. When you're not into sports, it can be annoying to be around people who are fanatic about a certain team. When you start watching sports with her, try to do it at home, with a few people she already feels comfortable with (not your buddies who always spill beer on the couch). You want her to feel relaxed, and associate sports with down time, not time to clean up after you and your friends, or time to watch the kids while you watch the game, or time to put up with incessant howling and cheers.
- 2. Choose a sport where your wife/girlfriend will have a pleasant view.** You're not the only one who enjoys eye candy. Sports which display well muscled torsos or legs might be a good introductory choice. Don't pretend you don't know which sports have the most attractive athletes. If you can get her into a sport that you're not particularly crazy about, it might be a stepping stone to your favorite sport. If she's going to take an interest in something she normally wouldn't, you should be willing to as well.



How to Make Brownies from Scratch



There is nothing as delicious as biting into a freshly baked brownie. But if the only brownies you've ever had are [from a package mix](#), you are in for a treat. Obviously, these brownies require a little more work, but it's worth it. This recipe, in particular, features a coconut topping.



Delicious brownies.



Ingredients

[edit]

Makes 40

- 1 four oz package sweet cooking chocolate
- 6 tablespoons butter
- 2 tsp vanilla
- 2 beaten eggs
- 1/4 cup sugar
- 2 tablespoons milk
- 1 cup all purpose flour
- 1/2 teaspoon baking powder
- **Coconut topper:**
 - two egg yolks
 - 2/3 cup sugar
 - one can evaporated milk
 - 1/4 cups butter
 - 1 cup flaked coconut
 - 1/2 cup chopped walnuts

Steps

[edit]

1. Melt chocolate and butter in a saucepan; stir constantly. Remove from heat. Add eggs, sugar, milk and vanilla and mix well.



2. Stir together flour and baking powder and pour into chocolate mixture. Stir the mixture thoroughly.



3. Pour into a waxed paper lined baking dish, or a greased round 9x9x2" baking pan. Bake at 350° F for 15 minutes.



4. Spread with coconut topper and bake for 25-30 minutes more. Don't overcook - the center should be fudgy, not dry.

* Tips

[edit]

- Warm the brownie, add a scoop of Vanilla [ice cream](#) on top, and pour some chocolate [syrup](#) over it. This is a chocolate lover's delight.
- Serve with a cold [glass of milk](#) or a delicious cup of [coffee](#).

⚠ Warnings

[edit]

- They are *hot* when right out of oven.
- Knives are sharp; take care when cutting brownies.

≈ Related wikiHows

[edit]

- [How to Heat Brownies](#)
- [How to Make Chewy Chocolate Brownies](#)
- [How to Make Brownies Using a Packet Mix](#)
- [How to Perk Coffee](#)
- [How to Make Good Iced Coffee](#)
- [How to Make a M&M Brownie Sundae Cake](#)

📝 Articles for You to Write

Here is a list of suggested articles that have not yet been written. You can help by researching and writing one of these articles.

- [How to Make Chewy Brownies](#)
- [How to Make Fudge Brownies](#)
- [How to Make Flaked Coconut](#)
- [How to Make Easy Brownies](#)

wikihow

planning

page

plan

title

goal

ingredients

initial state

tools

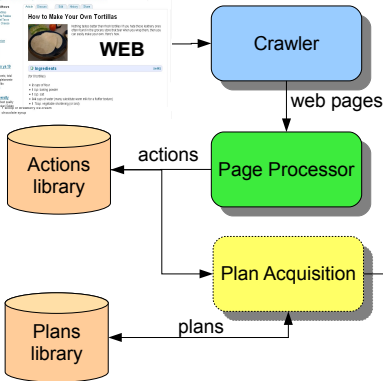
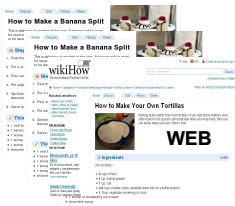
initial state

steps

instantiated actions

tips, warnings, videos, ...

?



```

Initial State:
thingsyouneed(cups)
[...]
tool(flour, 2, cups)
tool(salt, 1, teaspoon)
[...]

Goal:
Tortilla

Actions:
combine(flour, salt)
cut(shortening)
add(water)
[...]
  
```


Processing natural language

- Stemming
- Stopwording
- WordNet
- Regular expressions
- ...

Common problems

- Semi-structured input: XML, wikihow structure, natural language
- Different writing styles: serious, comic, slang, ...
Don't hurt yourself with the fork. You will be a slave to the Peeps if you eat it at all
- Non-useful information
Column stills produce purer alcohol because they essentially redistill the alcohol in a single pass
- Different ways to name things
freshly kosher ground pepper tasty salt, hand shredded pepper tasty salt, pepper tast black salt

#recipe(id, title, url)

recipe(1, Appreciate Pizza Left Overs,
<http://www.wikihow.com/Appreciate-Pizza-Left-Overs>)

recipe(2, Assemble a Quick Pea Salad,
<http://www.wikihow.com/Assemble-a-Quick-Pea-Salad>)

recipe(3, Avoid High Fructose Corn Syrup,
<http://www.wikihow.com/Avoid-High-Fructose-Corn-Syrup>)

recipe(4, BBQ or Grill a Whole Fish Without Burning,
<http://www.wikihow.com/BBQ-or-Grill-a-Whole-Fish-Without-Burning>)

recipe(5, Bake Apricot and Semolina Cake,
<http://www.wikihow.com/Bake-Apricot-and-Semolina-Cake>)

```
#action_name(plan_id, action_step, tool_id)
prepare(1,1,4344)
place(1,2,7829)
grab(1,3,4344)
eat(1,4,4344)
clean_up(1,5,1)
open(2,1,498)
drain(2,2,498)
add(2,3,498)
chop(2,4,290)
add(2,5,7)
add(2,6,807)
add(2,7,807)
add(2,8,55)
add(2,9,276)
...
```

```
#tool(header, plan_id, tool_id, quantity_normalized, quantity_type)
tool(other,1,1,1,units)
tool(object,1,3173,1,units)
tool(object,1,3173,1,units)
tool(other,2,7,1,units)
tool(ingredient,2,45,1,units)
tool(ingredient,2,55,1,units)
tool(ingredient,2,498,1,units)
tool(other,2,807,1,units)
tool(ingredient,2,4714,1,units)
...
```

Analysis

- Recipes: <http://www.wikihow.com/Category:Recipes>
 - 3144 recipes parsed/acquired plans
 - 167 sub-categories found
 - 24185 different individual actions
- Sports: <http://www.wikihow.com/Category:Team-Sports>
 - 979 team sports parsed/acquired plans
 - 22 sub-categories found
 - 6576 different individual actions
- Travel destinations: [http://\[...\]/Category:Destinations](http://[...]/Category:Destinations)
 - 230 travel destinations parsed/acquired plans
 - 16 sub-categories found
 - 2017 different individual actions

Where can we use it?

- Case-based planning
- Learning action models
- Activity recognition: daily life, security
- Plan recommendations: tourism, buying sets of goods
- Semi-automatic generation of workflows
- Generation of new plans by recombination: new recipes
- Analysis of common subsequences
- Helping tools to introduce new wikihow pages by suggesting similar plans