

Intelligent Search for Biologically Inspired Design

*Evangelia
Spiliopoulou*

*Spencer
Rugaber*

*Ashok
Goel*

*Lianghao
Chen*

*Bryan
Wiltgen*

*Arvind Krishnaa
Jagannathan*

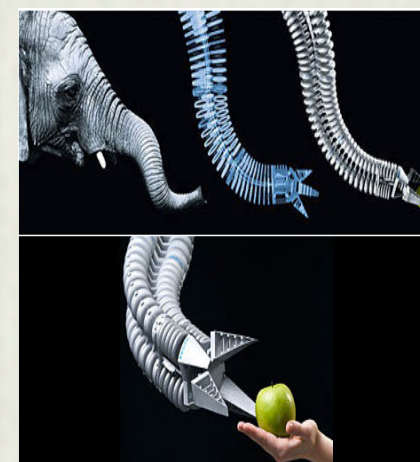
Design & Intelligence Laboratory, School of Interactive Computing
Georgia Institute of Technology

Biologically Inspired Design:

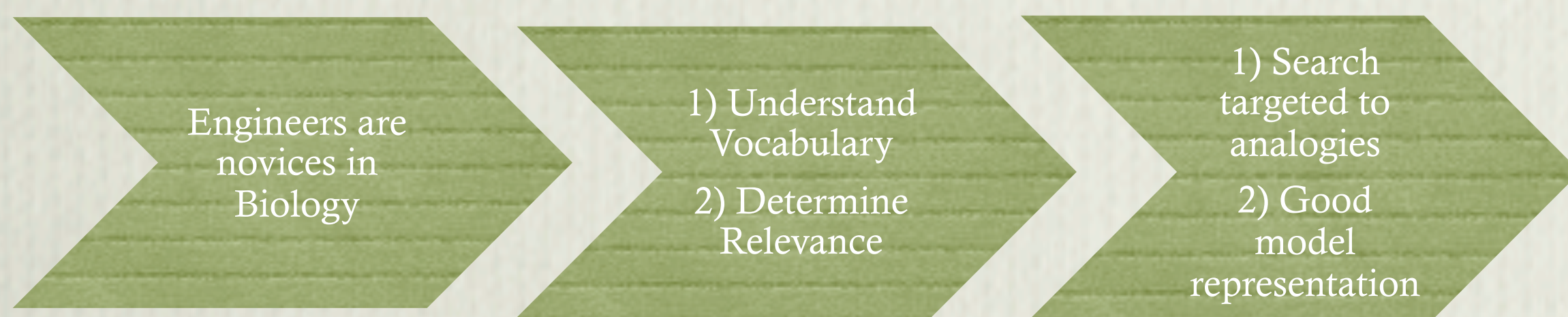
~Cross-domain Analogies



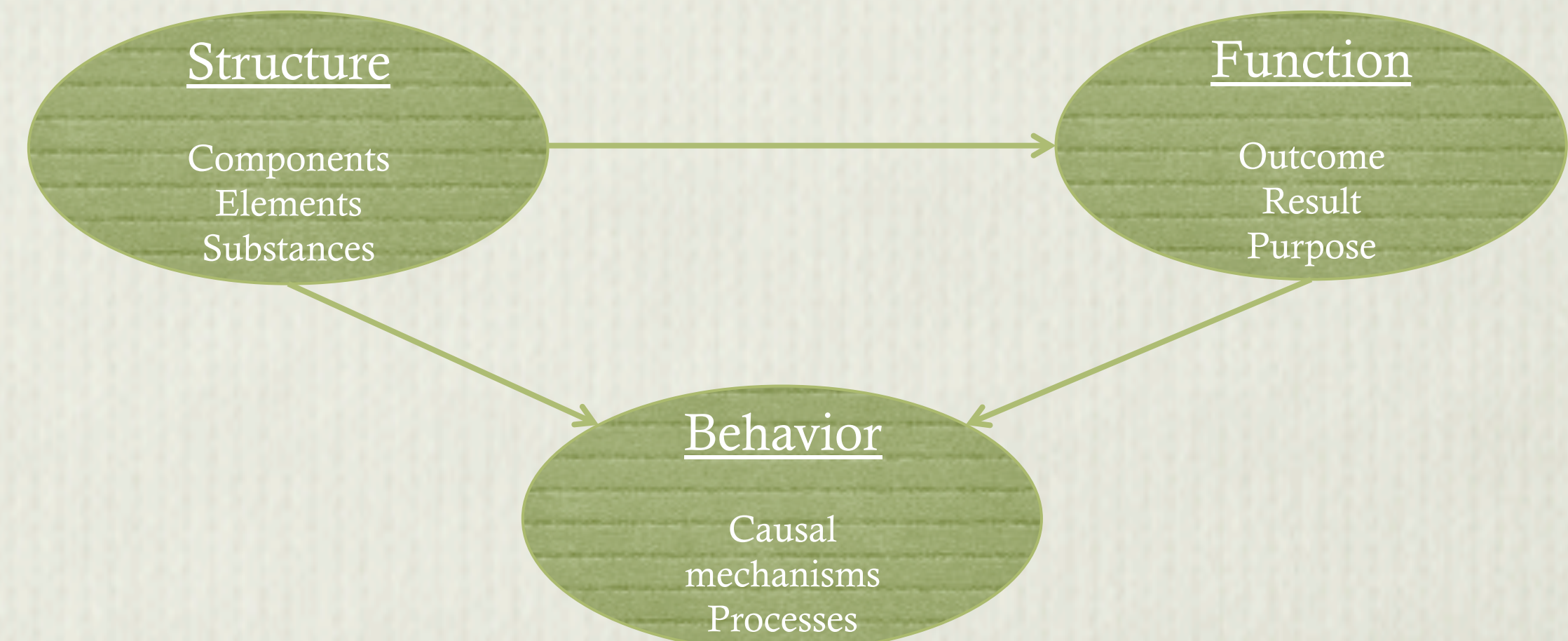
**Biology ->
Engineering**



Problem:



SBF model:



IBID vs Keyword-based search:

1) Precision

Semantic tagging improves precision. Search targeted to find cross-domain analogies. Semantic modeling is necessary to represent content.

2) Relevance

Able to represent content/mechanisms. Improves understanding of text by model representation.

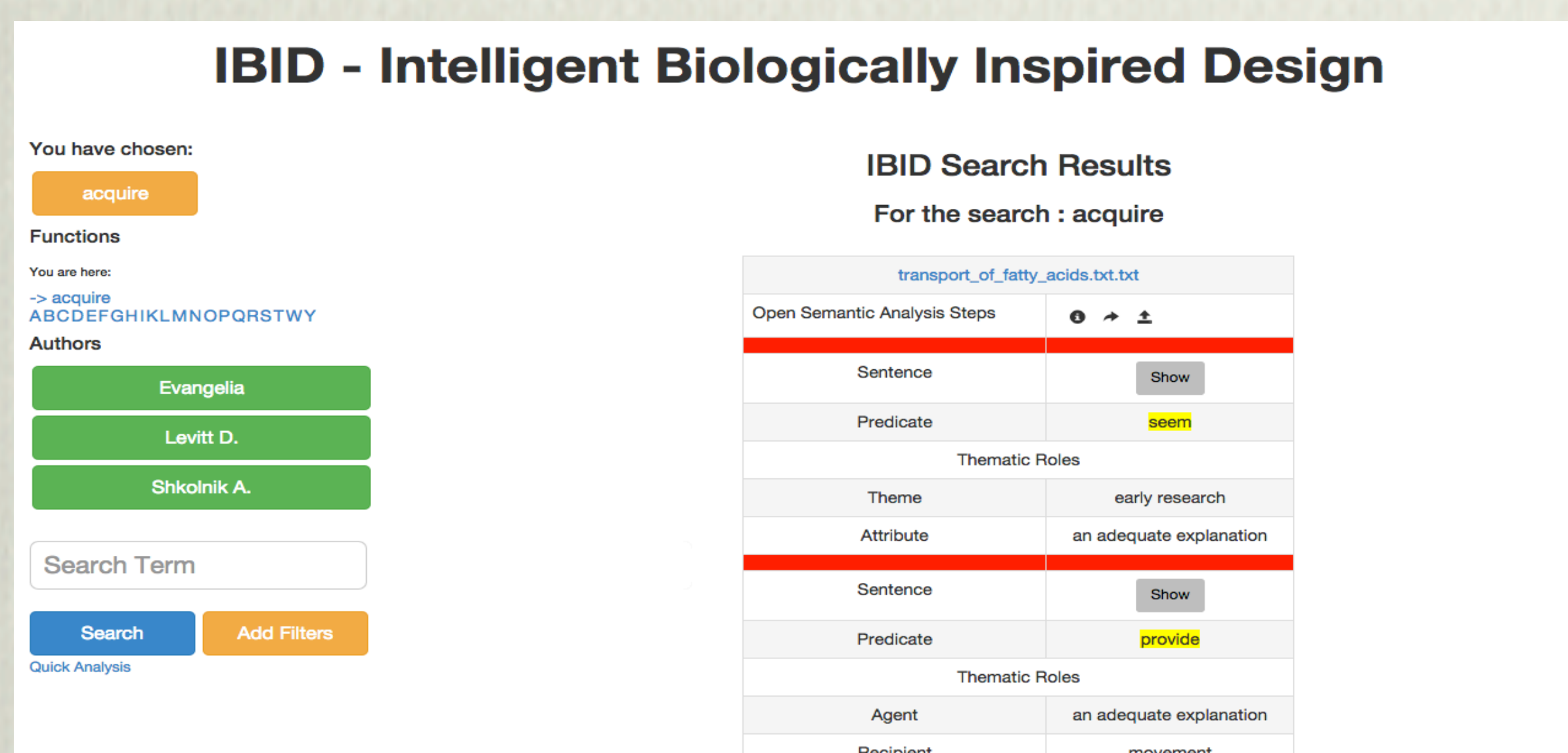
Analysis of Function component:

Text: "An *in vitro* rat intestine preparation can transport water from mucosa to serosa."

Output:

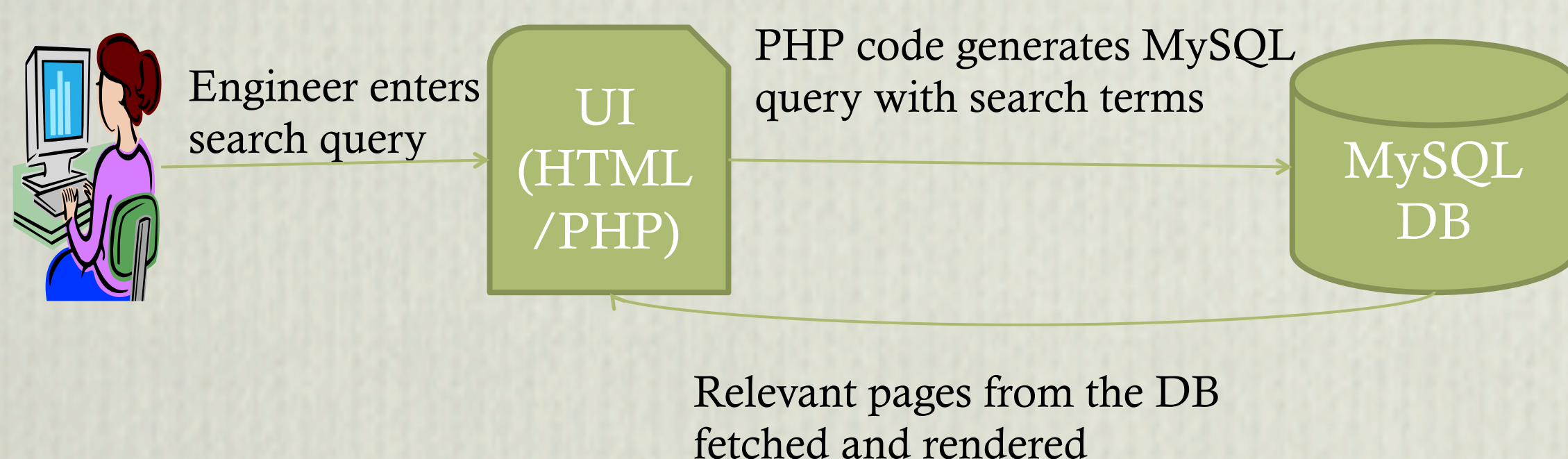
```
=====
Predicate: transport
=====
Sentence: an in vitro rat intestine preparation can transport water from mucosa t
=====
Thematic Roles
=====
Theme: water
Initial_Location: mucosa
Agent: an in vitro rat intestine preparation
Destination: serosa
```

User Interface:



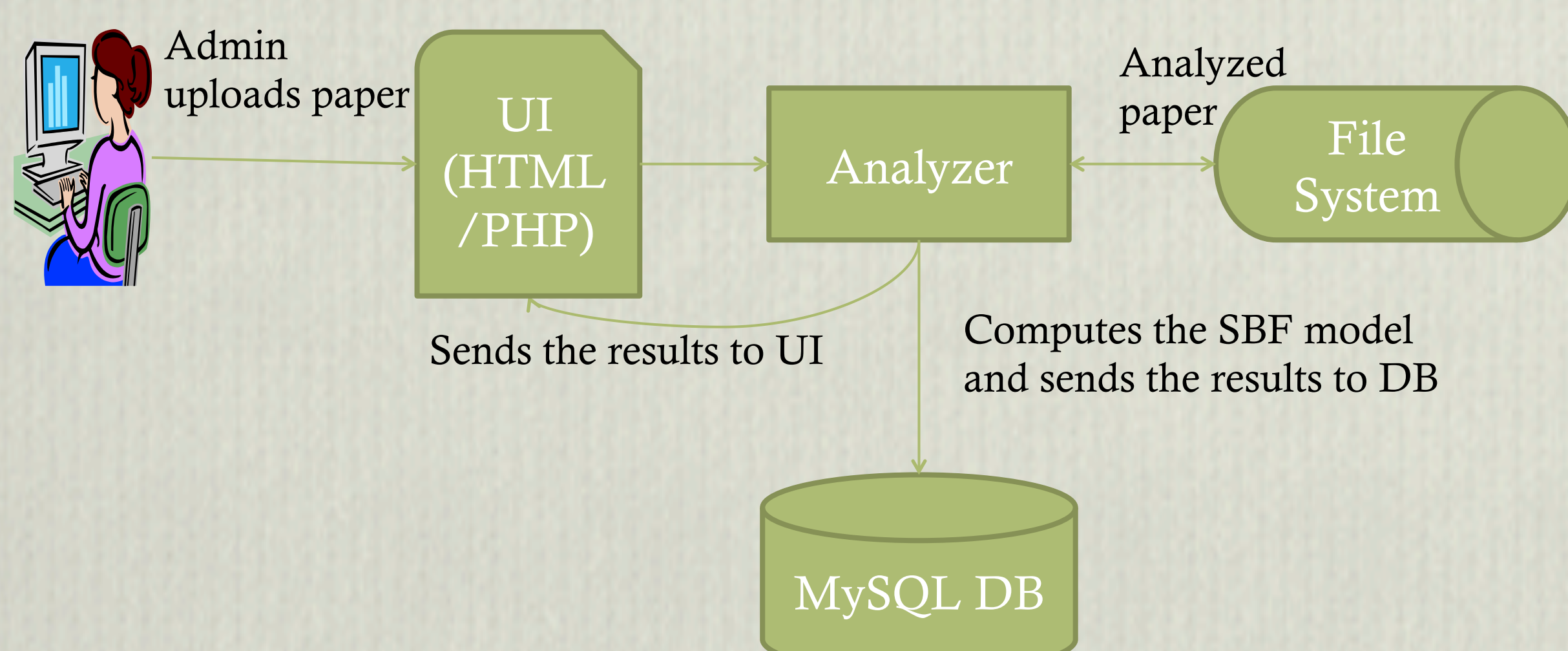
Scenario 1:

Engineer searches for papers



Scenario 2:

Admin adds biology paper to DB



Scenario 3:

Taxonomy expert updates Taxonomy

