

Ch 4: Validation

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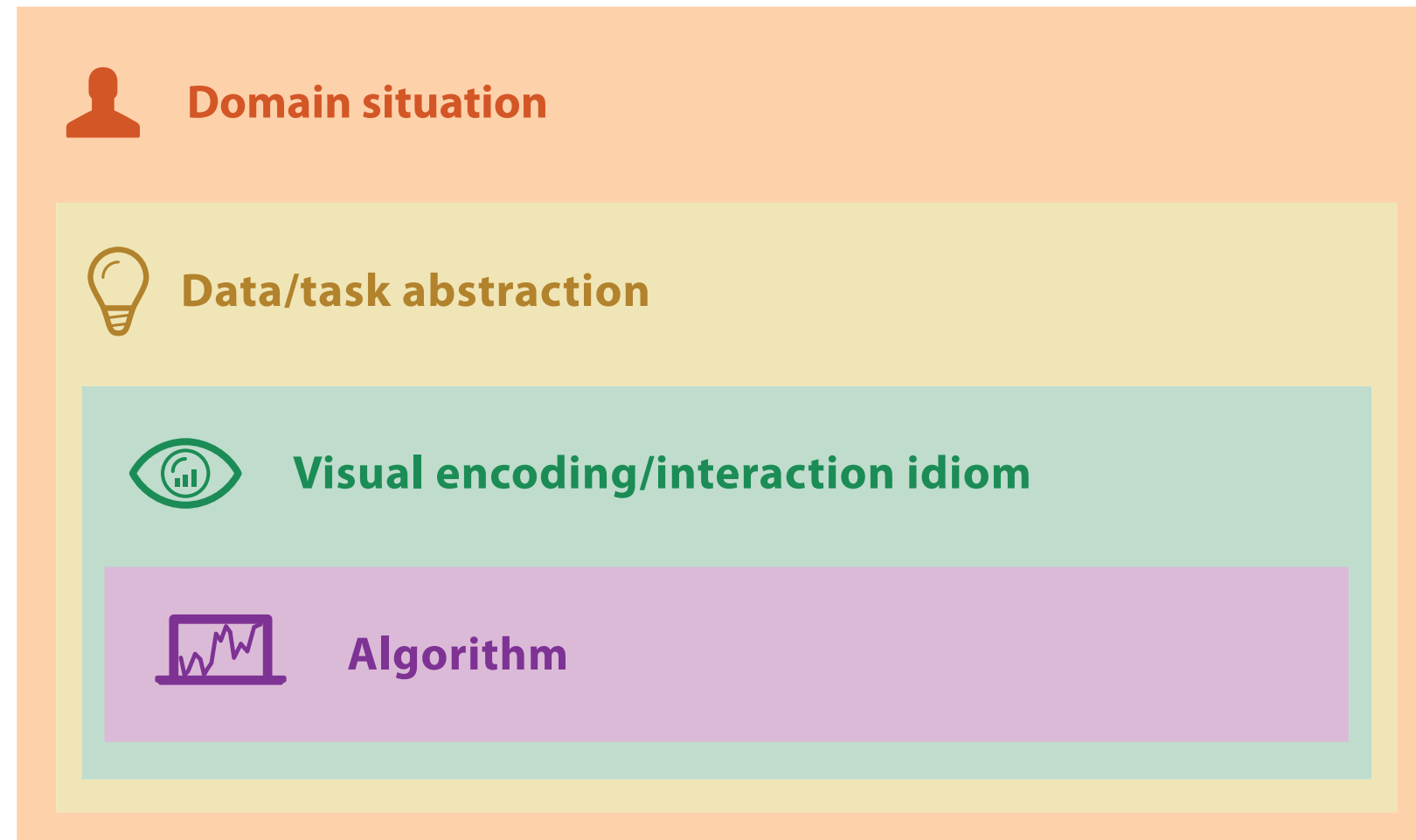
CPSC 547, Information Visualization

Day 4: 12 January 2017

<http://www.cs.ubc.ca/~tmm/courses/547-17>


In-class exercise: Abstraction

VAD Ch 4: Analysis: Four Levels for Validation




Four levels of design and validation

- four levels of design problems
 - different threats to validity at each level

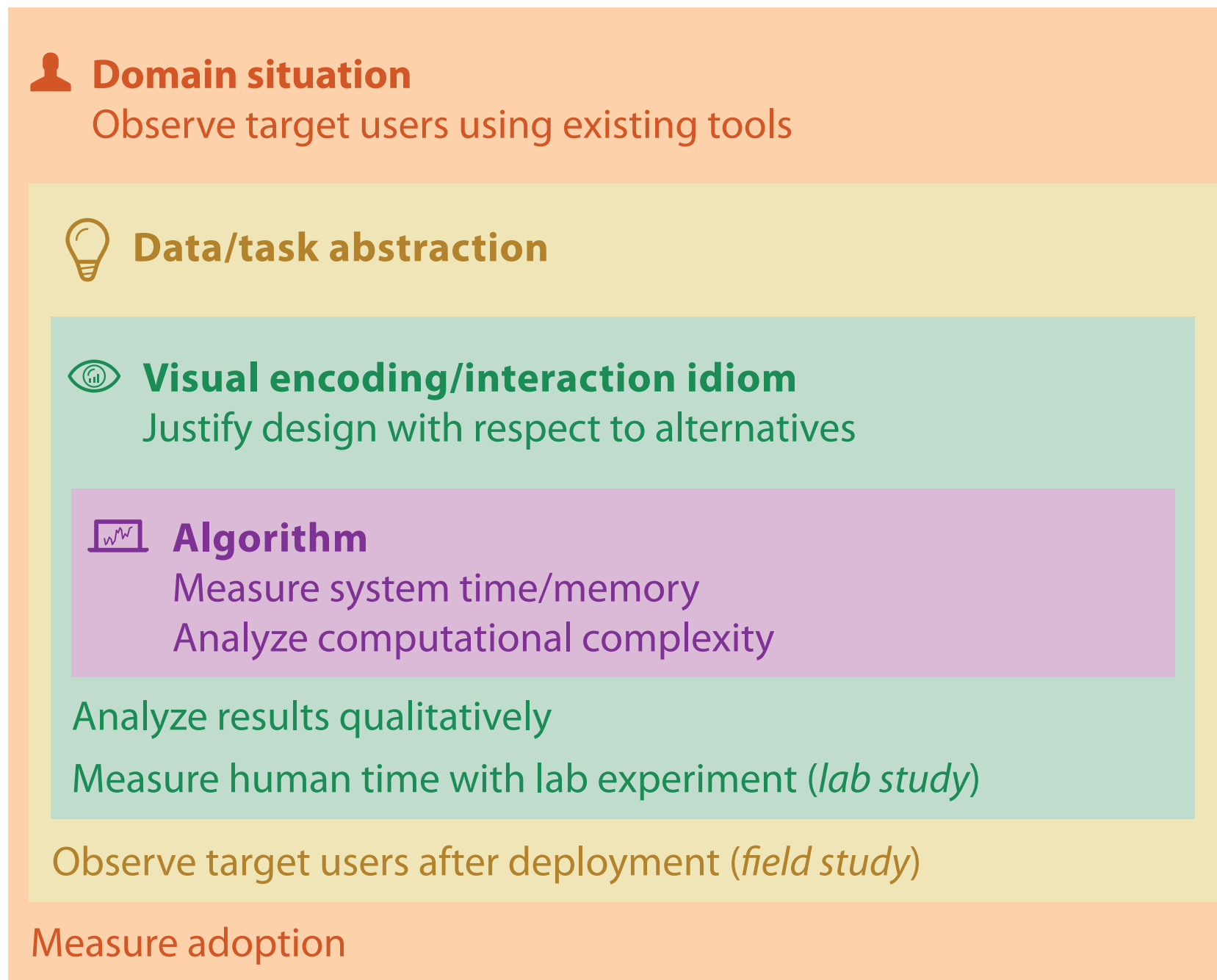
 **Domain situation**
You misunderstood their needs

 **Data/task abstraction**
You're showing them the wrong thing

 **Visual encoding/interaction idiom**
The way you show it doesn't work

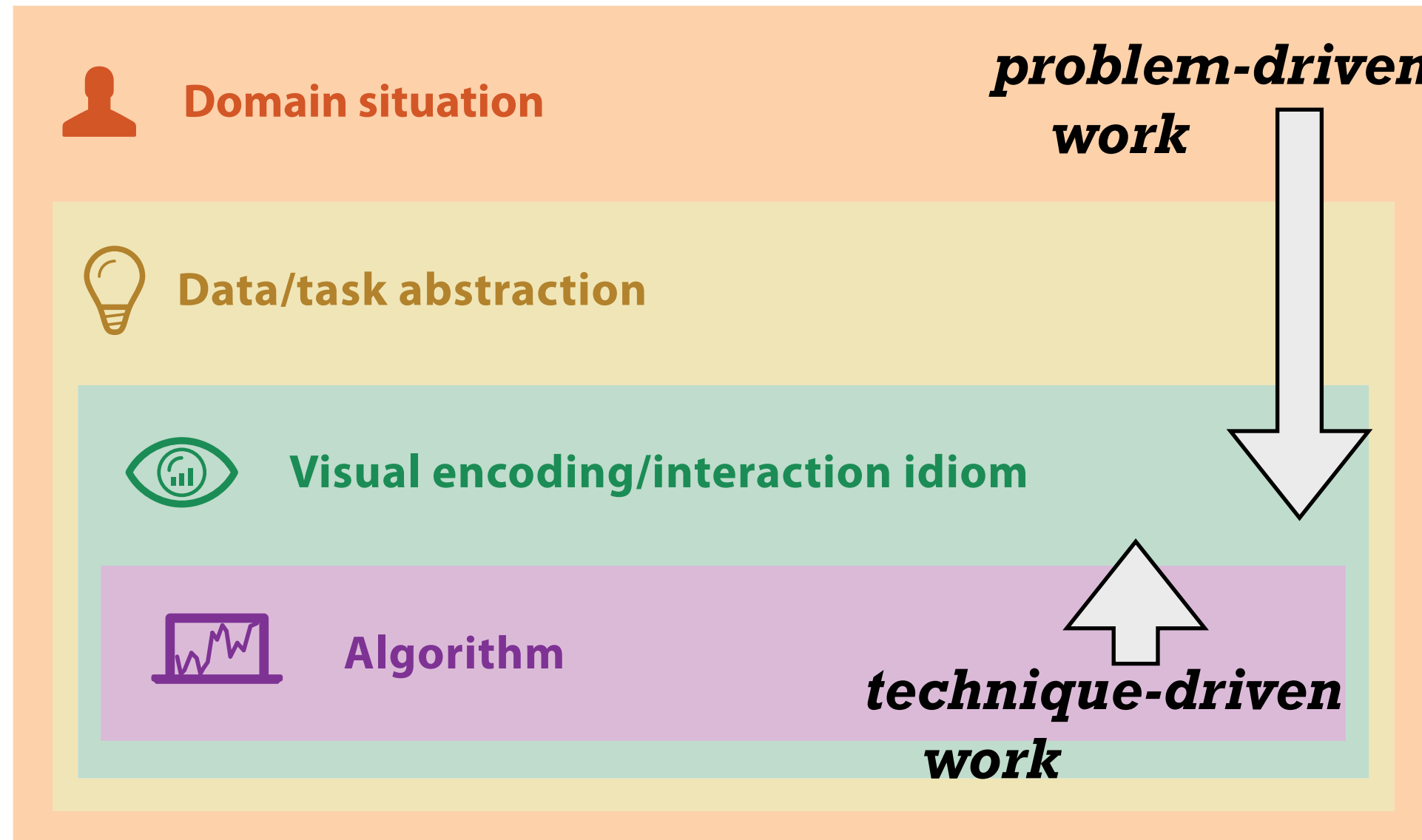
 **Algorithm**
Your code is too slow

Validation by level



- mismatch: cannot show idiom good with system timings
- mismatch: cannot show abstraction good with lab study

Directionality & scope



Paper types

- each has different contributions, validation methods, structure
 - design studies
 - technique/algorithm
 - evaluation
 - model/taxonomy
 - system

<http://ieevis.org/year/2017/info/call-participation/infovis-paper-types>

Paper types: Validation

- design studies
 - qualitative discussion of result images/videos
 - abstraction & idiom validation: case studies, field studies, design justification
- technique/algorithm
 - qualitative discussion of result images/videos
 - algorithm validation for algorithm papers: computational benchmarks
 - idiom validation for technique papers: controlled experiments
- evaluation
 - (controlled experiment as primary contribution)
- theory/model/taxonomy
 - *show power: descriptive, generative, evaluative, (predictive)*
- system
 - *show power for developer using system*

Paper structures

- typical research paper vs expectations for this course final report
 - more on implementation
 - novel research contribution not required

<http://www.cs.ubc.ca/~tmm/courses/547-17/projectdesc.html#outlines>

Reading visualization papers

- one strategy: multiple passes
 - title
 - abstract, authors/affiliation
 - flip through, glance at figures, notice structure from section titles
 - skim intro, results/discussion (maybe conclusion)
 - fast read to get big ideas
 - if you don't get something, just keep going
 - second pass to work through details
 - later parts may cast light on earlier parts for badly structured papers
 - third pass to dig deep
 - if it's highly relevant, or you're presenting it to class
- literature search
 - decide when to stop reading: is this relevant to my current concerns?

Literature search

- this course: I will give you seed papers during our 1 on 1 meetings
- forwards vs backwards search
 - Google Scholar forward citations!
 - only a subset of forwards & backwards citations will be what you need
- building up landscape
 - authors/affiliations will have more signal as you develop expertise

Next time

- Reading
 - VAD Ch 5: Marks and Channels
 - 39 Studies about Human Perception in 30 Minutes
 - you pick: either read blog post or watch video
- In class
 - group work: decoding visual encodings