Lan Lyu

Portfolio
2022

Lan Lyu

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Education	09/2018 – 07/2022 Peking University, School of Computing, Bachelor of Science
Employment	03/2021 – 09/2021 BodyPark.Inc, AI Product Manager Intern 06/2020 - 08/202 Yunji Sharing Technology Co., Ltd., Product Manager Intern
Research	07/2021 – present Human-Computer Interaction lab, National University of Singapore 02/2020 – 06/2021 Center on Frontiers of Computing Studies, Peking University

Contents

Project 1
Inside PKU Magazine

Inside PKU is an unofficial magazine focusing on non-fiction reports through pioneering expressions. As the senior photographer, I selected photography topics, arranged photographers, picked up final photos, and designed the visual presentations. At the same time, as one of the designers. I made posters, articles, comics, and typesetting.

Select Topics & Arrange Photographers

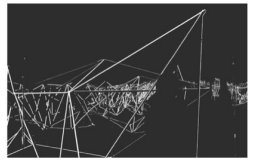
Midnight at PKU

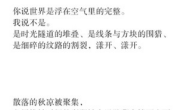
I chose this topic because glowing screens and electric lights created eternal day, while in some hidden corners, night still showed its magic.
3 photographers and me left the lights and go out into the darkness outside the building. When the night embraced the entire Peking University, the scene here was completely different from the daytime.

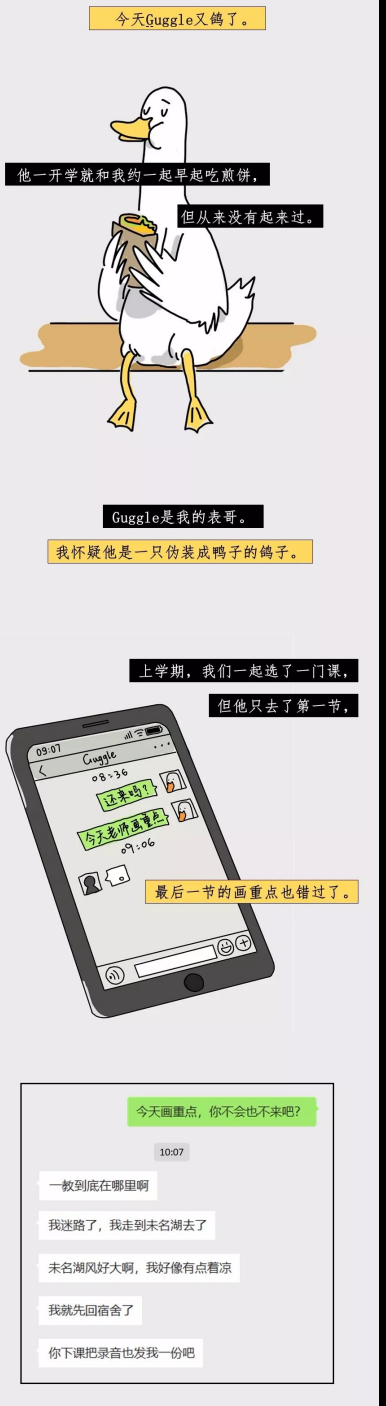
Design Visual Representations

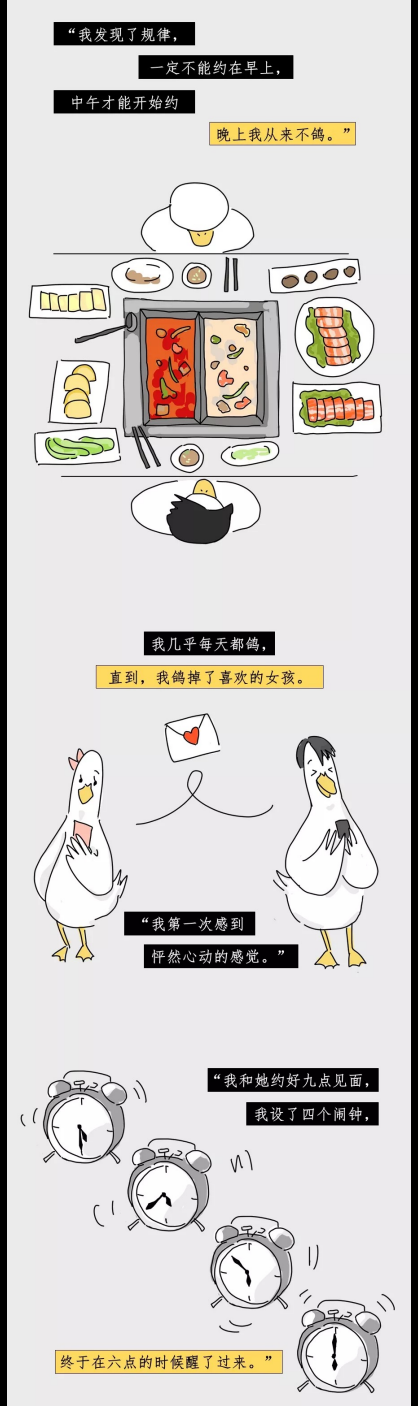
Nomenclature of Shadows

This was an experimental typography. Since the subject of the photos was the various forms of light, I told the designer to add some twist and connect the pattern to the photo.









Design

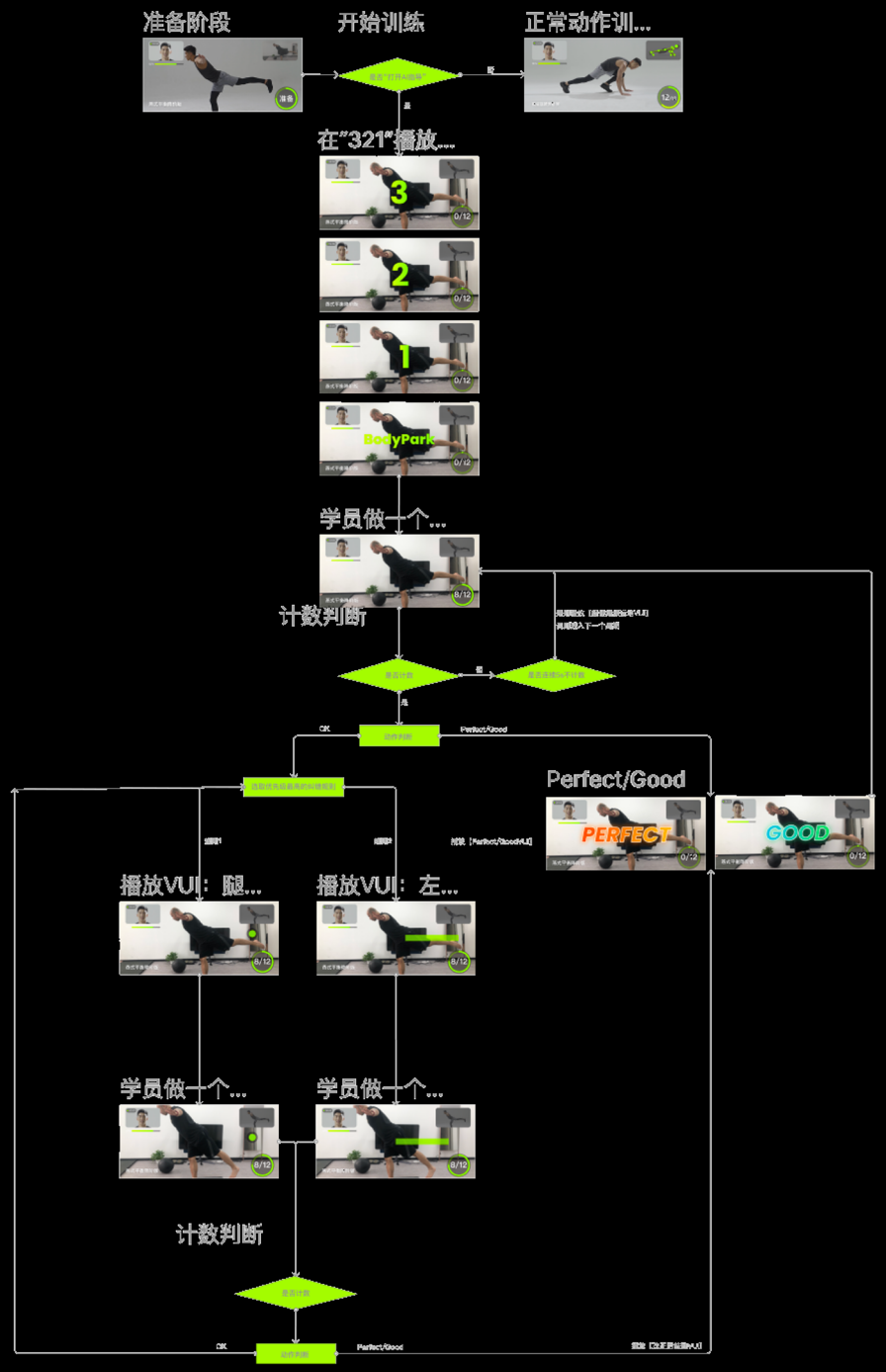
“Bubble” Comic Series

Design

Park Series

Project 2
BodyPark AI Tutor

During my internship as an AI product manager at BodyPark, my responsibilities included improving AI tutor on its accuracy of counting actions, giving directions, and ways to motivate users to persist longer.



Product Design

Counting Rules Reorganization

To know the key rule to take count of each actions, I stayed with coaches for a month, checked every exercise action with them, renewed the logic in the counting process, reorganized the counting rules, and finally built a effective system filled with professional rules.

UX Design

Giving Directions

To teach users how to do actions correctly and Persist longer voluntarily, I surveyed existing products and conducted A/B tests on how to indicate the correct poses and tell users when they are exercising.

GUI方案

1_1/1_2 下蹲时臀部再低/高一些

1_1/1_2 下蹲时臀部再低/高一些

1. 肩髋膝保持一条直线

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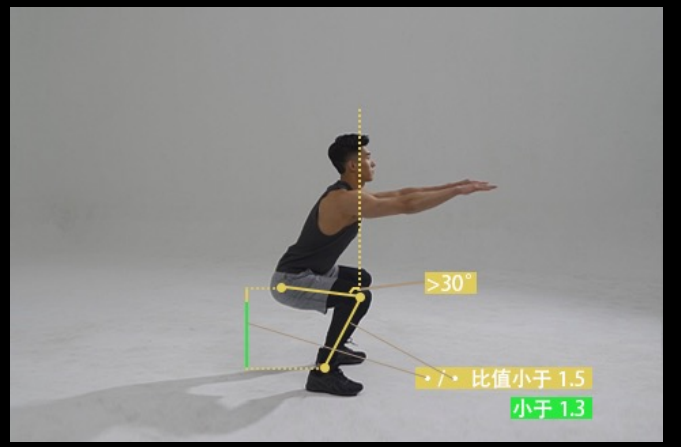
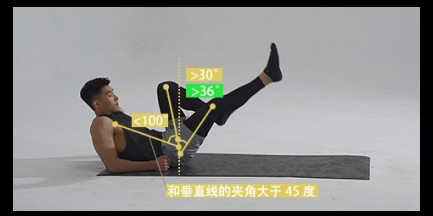
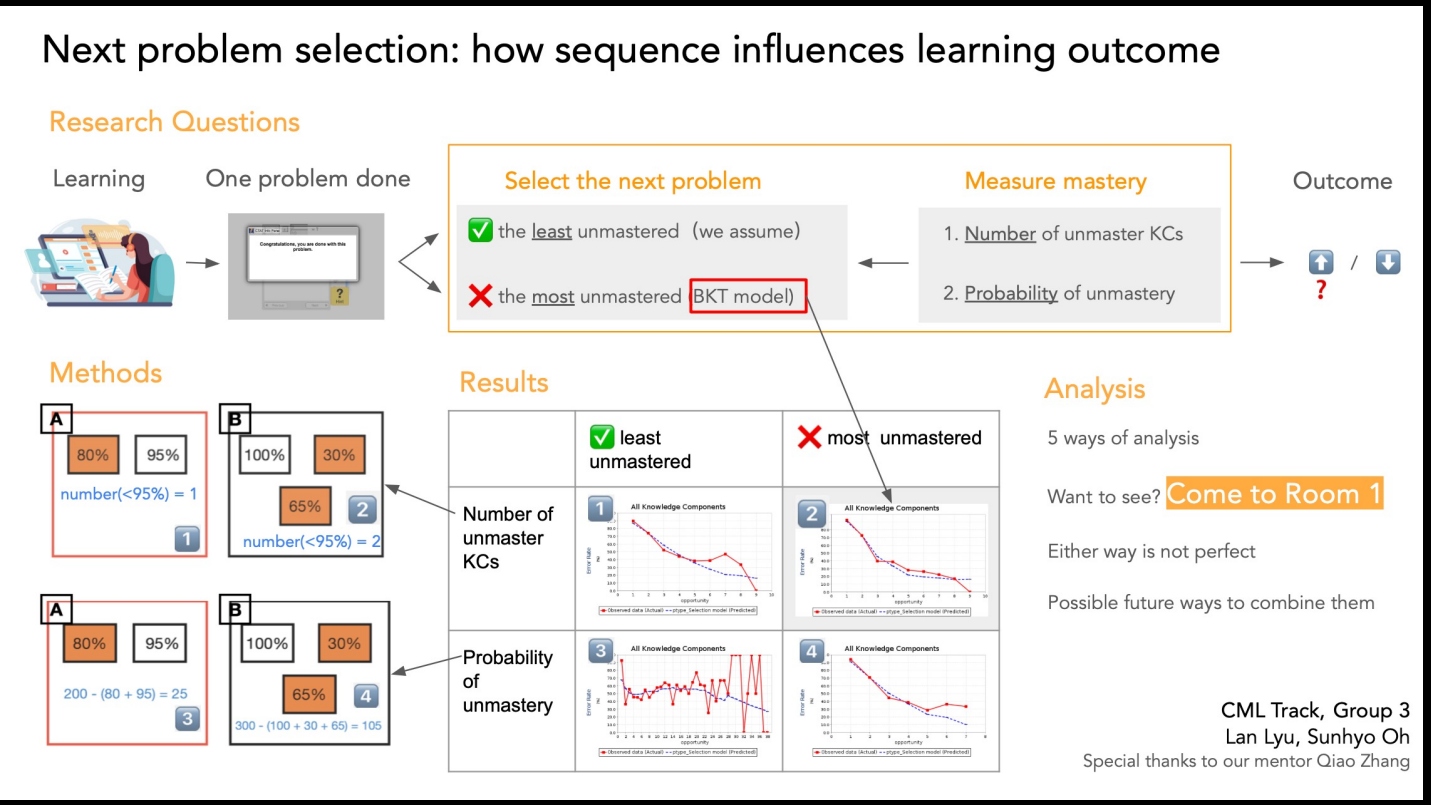


3. 前侧大腿与小腿保持90度





Project 3
Next Problem Selection

This was the team project at LearnLab Summer School of CMU. The team had two members, Sunhyo Oh, a master of education from Korea, and me. We learned computational learning theories and models from scratch and conducted the research project in a week.

Dr.Maclellan

- easiest probs come first -> model will not be willing to try harder ones (anyone can clarify if I understood right?? I don't think I really get this comment:/)
- 1st assumption: students will solve the problem relevant to what they already know -> set 2nd assumption: easier first? (not sure on this one too) too easier, students get boring
- avoid the hardest problem rather than choosing the easiest

Dr.Harpstead

- mix KCs -> give shaking effect + additional KCs (mix difficulty factor)

Approach
Modify the bkt controller by updating the next_problem method.
Select the next problem with the least number of unmastered KCs.

Data Preparation

1. Create KC models: Selection, ptype_Selection
2. Step = Selection
3. Check incomplete records
4. Rollup in LearnSphere

Analysis

1. Average number of total problems; proportion of each type of problem addressed
   hypothesis: students in the easiest condition might not purse harder problems
   a. total number each student / 30
   b. #AD/total number of problems, #AS/total number of problems, #M/total number of problems
   c. make a table showing the proportions of each problem type in four conditions
2. Average total transactions simulated students take in solving the problems
   a. total transactions = incorrect + hints + correct (rollup data)
   b. sum(total transactions) / #problem each student
   c. make a table as well
3. Compare the learning curves
4. **Probability of mastery by end of training - all KCs and individual KC**

Presentation

1. More problems are addressed in the two score groups than the two KC groups
2. More **problems** are addressed in the groups which problems with most KCs are selected first
3. More **transactions** are taken in the groups which problems with least KCs are selected first
4. Open discussion
   a. Why are the students not following the correct steps in solving the problems?
   b. Is it a good/bad thing that more mistakes are made in the training?
   c. Should a well-designed tutor guide students to follow the correct step in solving problems?

1 days
2 persons

"Effective on Learning": 5 Analyses

1-1. Average number of total problems

1-2. Proportion of each type of problem addressed

2. Average total transactions simulated students take in solving the problems

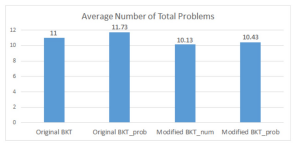
3. Learning curves

4. Predicted error rate by the end of training

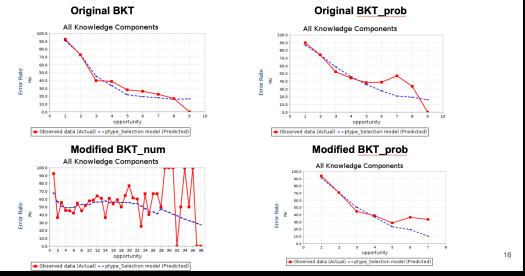
5. Weird observations

Analysis 1-1. Average number of total problems each student takes

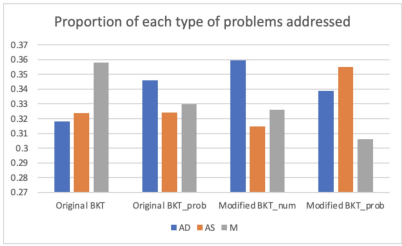
	average problems
original_bkt_num	11.000000
original_bkt_prob	11.733333
modified_bkt_num	10.133333
modified_bkt_prob	10.433333



Analysis 3: Learning Curves



Analysis 1-2. Proportion of each type of problem addressed in each condition

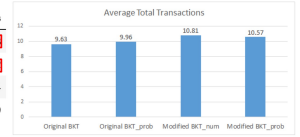


Analysis 4: Predicted Error Rate by the end of training

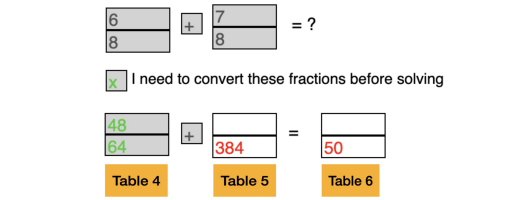
	Total number of problems	Predicted Error rate
Original BKT with the greatest number of unmastered KCs	176	0.164
Original BKT with the greatest probability of unmastery	185	0.161
Modified BKT with the least number of unmastered KCs	178	0.271
Modified BKT with the least probability of unmastery	183	0.099

Analysis 2. Average total transactions each student takes in solving the problems

	average transactions
original_bkt_num	9.630878
original_bkt_prob	9.958002
modified_bkt_num	10.805034
modified_bkt_prob	10.568939



Analysis 5: Weird Observations: Original BKT, Original BKT_prob




LUMINE

Thank you.