



# Centient

## A Simpler Budgeting Application

Ty Deery '22, Conor Greene '22, Finnegan McGovern '23

Department of Computer Science, Trinity College

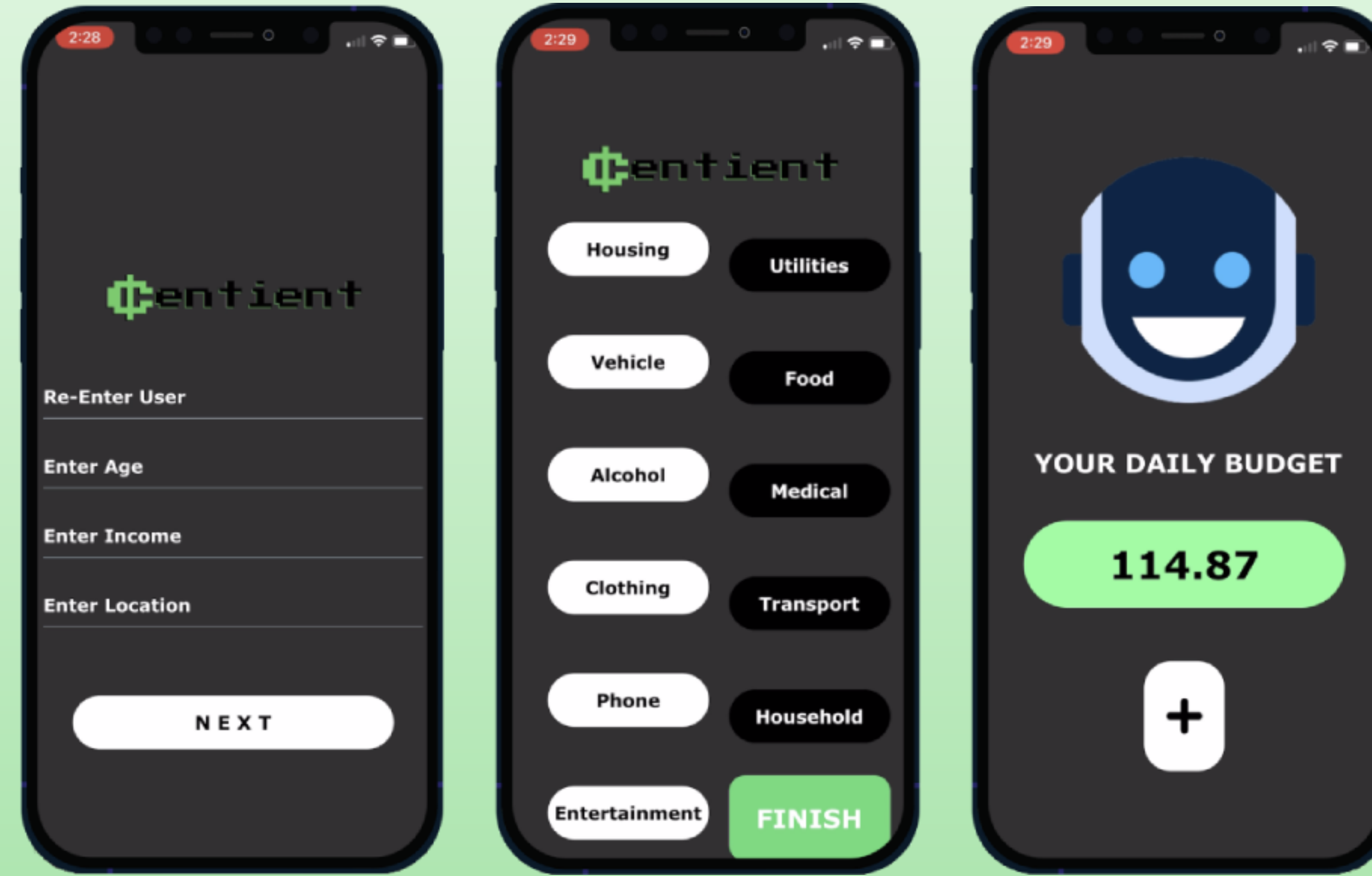
Advisor: Professor Cuiyuan Wang

### Introduction and Significance

- **65%** of Americans do not know how much they spend every month
- **1/3** of Americans are unhappy with their current spending habits
- Many existing budgeting apps are convoluted and intimidating to new users
- We wanted to develop a simpler approach to budgeting that leverages **positive reinforcement** of better spending habits
- Centient's **expense tracking** system makes it easy for users to keep an eye on the spending categories they wish to track

### Application Features

- During the setup process, our application asks for only **three inputs** from our users: (Age, Location, Income)
- Using these inputs, a recommended **daily budget** is calculated via our algorithm to help our users spend responsibly
- Our application allows users to select which **expense categories** they would like to track, i.e. Housing, Utilities, Food, Transport, etc.
- Every time a user enters a new expense, their daily budget decreases. If a user spends too much, **Robby**, the animated Centient avatar's mood worsens



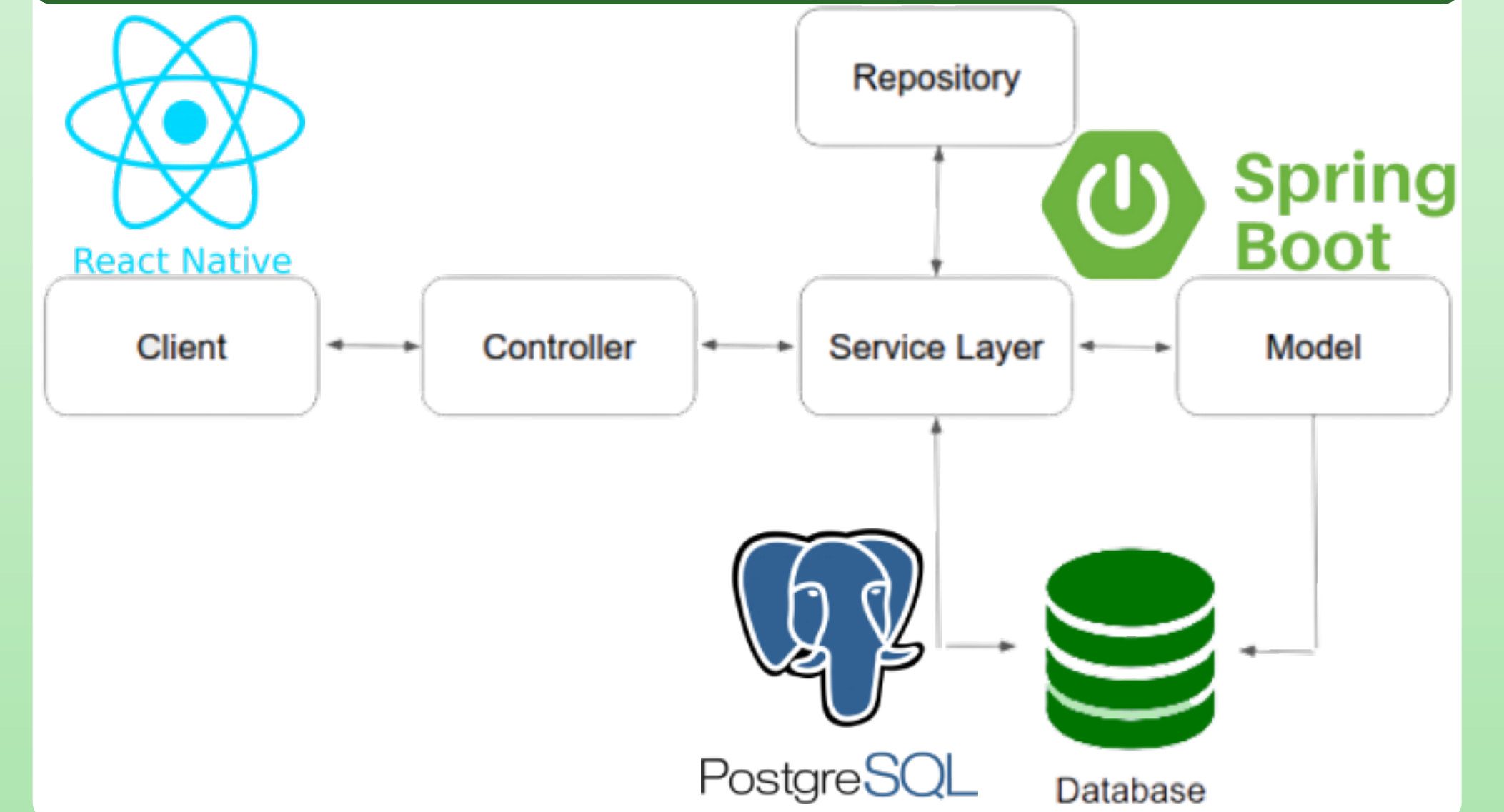
### The Algorithms

- Centient uses **three** algorithms for budget calculation
  - Initial Budget (IB)**= Income \* Suggested percentage spent (by age) \* Cost of Living index less housing
  - Suggested Budget (SB)**= IB \* DvHousing \* DvUtilities \* DvVehicle \* DvFood \* DvAlcohol \* DvMedical \* DvClothing \* DvTransport \* DvPhone \* DvHousehold \* Dv Entertainment
  - Rebalanced Budget (RB)**= (IB \* Wk1Spending \* Wk2Spending \* ... \* WkNSpending) / (N +1)
  - **IB**: The initial overall budget Centient suggests
  - **SB**: The budget for only the expense categories the user wishes to track
  - **RB**: The user's budget adjusted using their historical spending
- Dv = dummy variable on expense category



The various moods of Robby the Robot:  
Spend less to keep him happy!

### Architecture and Technologies



### Testing

- To test the efficacy of our algorithms, we synthesized a dataset of **12,000 users** representing a normal distribution of income earners from ages <25 to 75+
- Results: **90.5%** of users who adhere to the budget calculated by our algorithm will save after just **one week** of application use
- The aggregate savings for all users after week one was **5%**
- Asymptotic analysis of our algorithm reveals **100%** of users will save money provided they adhere to their suggested budget

### Acknowledgements

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