**Individual Pathways and Resources to Adaptive Control Theory-Inspired Scientific Education (iPRACTISE)**

Jungmin Lee, Jonathan J. Park, Ryan J. Voyack, Amo Zhang, Yang Gao, Dennis K. Pearl, Sy-Miin Chow

and other iPRACTISE members (see Acknowledgements)

The Pennsylvania State University

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### iPRACTISE - What Is It?

iPRACTISE is a digital education system that provides personalized training and testing as guided by user input and automated control theory algorithm.

- **Goals:**
  - Design a scalable prototype for iPRACTISE that can be used in undergraduate as well as graduate teaching of statistics
  - Compare the results of personalized training to uniform training in traditional classroom settings

### Why Personalized Education?

- **Heterogeneity in Students’ Knowledge:**
  - The diversity in student preexisting knowledge and expertise has greatly limited the scope and depth of traditional data science training
  - Linear and uniform training modules preclude students who lack specific kinds of skills from entry into certain training or career paths
  - Homogeneous solutions to heterogeneous student body is inefficient and may serve no one well

- **Explosiveness in Un-Navigated Materials:**
  - The digital age has allowed for unlimited sharing of training contents
  - Selection of appropriate training modules that fit an individual’s current ability and learning goal is similar to “finding needle in a haystack”

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### User Interface of iPRACTISE

#### To see a demo go to: [https://tinyurl.com/iPRACTISE-Demo](https://tinyurl.com/iPRACTISE-Demo)

- **Student View:** Computerized Assessment
  - Set point, desired speed
  - Discrepancy
  - Gas Pedal
  - Controller
  - Output
  - CO signal
  - User uptake
  - R knowledge

- **Instructor View:** Constructing Course
  - Individual Ability
  - Computerized adaptive test
  - Training goals specification
  - Training recommendations

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### References


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### Conclusions

- Individual components of iPRACTISE (e.g., item bank, control theory algorithm) will be shared with the broader research community

- iPRACTISE system could be adapted for application to a wide array of educational settings, and has the potential to serve as a model for the future of personalized digital instruction

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### Additional Resources

[Image 1](https://example.com/image1)

[Image 2](https://example.com/image2)

[Figure 1: Cruise Control Analogy](https://example.com/figure1)

[Figure 2: iPRACTISE in Application](https://example.com/figure2)

[Figure 3: Example Assessment Items for Adaptive Test](https://example.com/figure3)

[Figure 4: Example Tree: Learning Basics in R](https://example.com/figure4)

[Figure 5: Illustration of CAT](https://example.com/figure5)