

URBAN INTEL

Sustainable Urban Evolution
Simulator Using Predictive Modeling

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What Motivates Us Towards A SUSTAINABLE PRESENT

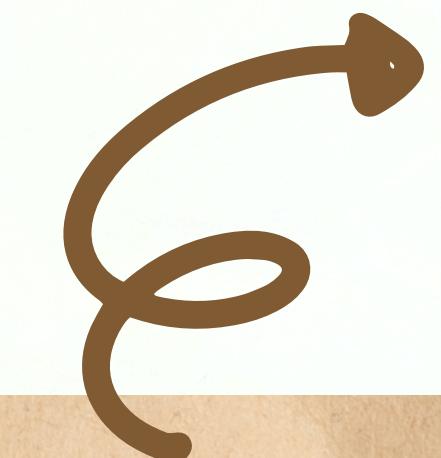
01. MOTIVATION

Blueprinting a City

- Environmental impact of the urban climate
- Economic cost of inaction
- City planning expands beyond architectural drawings
- Struggles to implement long-term changes

Democratizing Sustainability

- **Aim 1:** Simulating city design for anybody to model
- **Aim 2:** Personalized activism calls-to-action to encourage more grassroots efforts



02. DESIGN ARCHITECTURE

01. BACKEND

- Random Forest model trained on 2,000 synthetic cities
- 16 urban features transformed into 4 key factors (Livability, Sustainability, Resilience, Equity)
- Added Gaussian noise added to reflect real-world uncertainty
- Simulating 100 years of city evolution in 10-year steps by calculating the amount of stress being faced
- Lets users see how they can shape future outcomes

02. FRONTEND

- React app used to make a compelling and interactive page
- User input options are used to output a city visuals which change based on the overall computed score
- App shows likely evolution of the city over the next century
- Users select their demographic to see relevant advice and resources on environmental sustainability best practices and advocacy



03. USE OF AI

- Generative AI was used to generate code for integrating Python processed data into the React front end, since no one in the group had experience with using Python and React together before
- Used to gather some data in the external resources links
- Overall used to help with any small areas of confusion

03.



Let's take a look!

LIVE
DEMO



04. OUR IMPACT



Youth Advocacy

Community Members

Business Owners

Policy Makers



Representation Gap¹

Information Barrier²

Limited Access
and Resources³



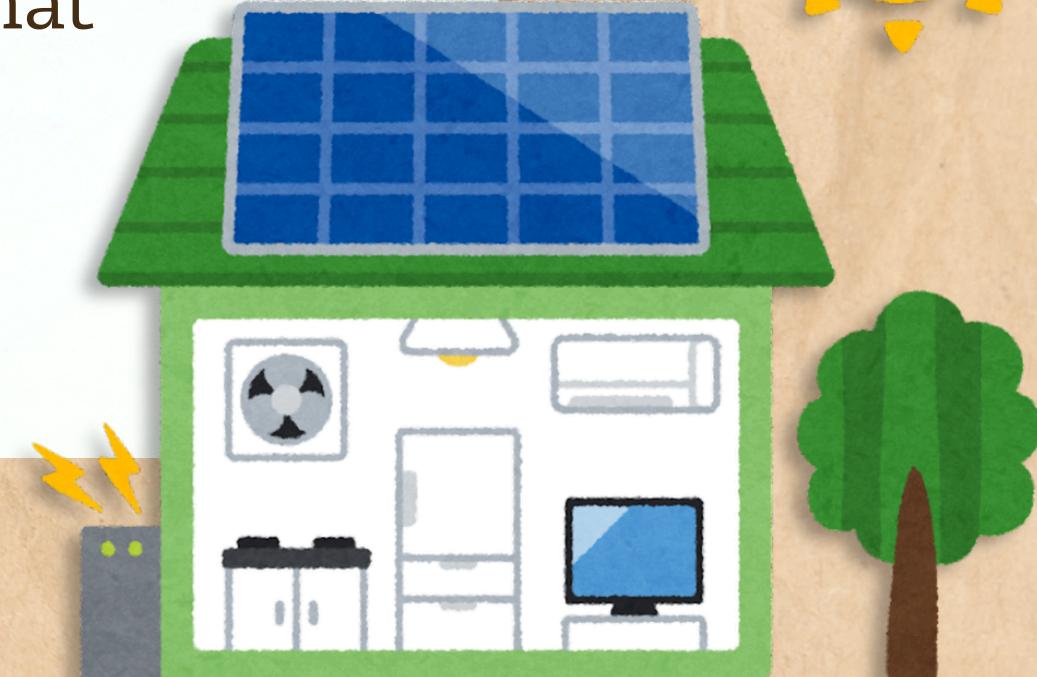
05. CONCLUSION

Overall

Predicting the future of urban growth through simulation and community-led action.

Future Steps

- Adding location specific data
- Integrating AI to ensure resources are relevant and up-to-date
- Adding greater descriptions of factors that contribute to our metrics of a city's sustainability
 - More references to what defines “air quality”
- Allow users to create an account to save resources



THANK YOU

<https://github.com/luciaalday/QWERHacks>



QWER Hacks!
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REFERENCES

1. <https://www.pwc.com/gx/en/industries/government-public-sector/global-youth-outlook.html>
2. <https://summit.sfu.ca/item/39698>
3. <https://climate.sustainability-directory.com/question/what-are-the-barriers-to-community-engagement/>