Harini Listens: Teaching AI to Understand Bird Songs in Her Garden

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Abstract

This proposal explores a child-led AI collaboration to analyze and interpret bird vocalizations from a backyard environment. Harini, an 11-year-old student, records local bird sounds and uses accessible machine learning tools to identify species and explore the rhythmic patterns in their songs. The project blends bioacoustic data with generative storytelling, where Harini imagines what birds might be "saying" based on pitch, sequence, and timing. We reflect on the role of AI in empowering children to listen to the natural world, the educational potential of such collaborations, and ethical implications of using AI to decode non-human voices—highlighting why protecting avian biodiversity is urgent if we can understand their songs.

1 Introduction

Birdsong has long fascinated humans as a bridge between nature and music. Recent advances in AI and bioacoustics now allow researchers to decode and classify bird vocalizations at scale. However, these technologies are rarely explored from a child's perspective.

In this work, we present a child–AI co-learning experience where Harini, an 11-year-old girl, becomes both a data collector and a storyteller. She records bird calls from her garden in Bangalore, India, and learns how AI can help identify species using tools like BirdNET and AudioSet. Harini then interprets these sounds creatively—narrating what she imagines the birds are *talking* about.

2 Methodology

2.1 Sound Collection and Preprocessing

- **Equipment:** Android phone with a voice recording app.
- **Duration:** Over 5 days, capturing 1–2 minute clips in the early mornings.
- **Preprocessing:** Trimmed and converted to WAV using Audacity.

2.2 Species Identification

- **Tool:** BirdNET (real-time bird sound ID using TensorFlow Lite).
- **Findings:** Detected common myna, red-whiskered bulbul, Asian koel.

2.3 Pattern Interpretation and Storytelling

Harini observed:

- **Pitch changes** = Emotion (happy, scared, excited).
- **Call-and-response** = Bird *conversations*.

- **Rhythm =** Daily routines (food search, warnings).

She journaled quotes like:

> ”The koel is telling the sun to wake up. The bulbul interrupts, saying ‘No, not yet!’”

3 Reflections

a) **AI Literacy through Nature:** Grounding abstract AI in real-world bird songs.

b) **Respectful Interpretation:** Reinforcing humility in non-human translation.

c) **Ethical Curiosity:** Prompting questions like ”Shouldn’t we protect birds if we understand them?”

4 Educational Implications

This approach encourages:

- Low-cost AI experimentation with nature-based learning.
- Narrative interpretation to build empathy.
- Cross-disciplinary integration (AI + Ecology + Ethics + Story).

5 Future Work

- Build a ”Junior Bird Listening Network” with more children.
- Use AI to generate music inspired by bird songs.
- Develop a quiz game with real and imagined bird ”messages.”

6 Conclusion

”Harini Listens” proposes a gentle but powerful use of AI—where children learn from the world by listening, interpreting, and imagining. The hope is that this inspires deeper respect for nature and early interest in responsible AI.Child-centered AI experimentation inspires respect for biodiversity and responsible citizen science.

References

[1] Kahl, Stefan, et al. ”BirdNET: A deep learning solution for bird identification using audio recordings.” Ecological Informatics 61 (2021): 101236.

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14. **Crowdsourcing and research with human subjects**
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    Answer: gray[NA]
    Justification: No crowdsourcing; child's participation was voluntary.
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    Justification: No formal research or institution involved; parental consent for data collection at home.
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