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Ancestral Algorithms: AI in Genealogical Research

Why?

This lesson on AI in genealogy offers a multidisciplinary approach, blending technology, history, and ethics, thereby fostering critical thinking and cultural awareness among students. By exploring the intersection of AI and genealogical research, it not only introduces students to cutting-edge technological applications but also prompts them to consider the profound implications of AI on personal and cultural identities. Furthermore, this lesson encourages students to engage with complex ethical dilemmas, preparing them to navigate and shape the increasingly digital and data-driven world responsibly and thoughtfully.

Materials Needed

- Printouts of the Student Handout (one per student)
- Printouts of the Group Discussion sheet (one per group)

Time needed

- Approximately 45 minutes

Objectives

- Students will be able to explain the role of AI in genealogical research and identify its potential to transform the study of family histories.
- Students will be able to evaluate the ethical implications of using AI in genealogy, particularly concerning data privacy and bias in data interpretation.
- Students will be able to critically analyze real-world examples where AI is used in genealogy, identifying both the benefits and the potential misinterpretations or oversimplifications made by AI.

Key Concepts & Vocabulary

- **Artificial Intelligence (AI):** Computer systems designed to perform tasks that typically require human intelligence.
- **Genealogy:** The study and tracing of family ancestries and histories.
- **Data Privacy**: The protection of personal information from unauthorized access or misuse.
- **Machine Learning**: A subset of AI where systems improve their performance by learning from data.

Lesson Components

1. **Before You Watch**: Connect the lesson to background knowledge of family studies in genealogy and get students' attention .
2. **Video**: Show the pedagogy.cloud video explaining the ethical considerations in the topic of AI use in genealogical research.
3. **Case Study**: Detail a real-world scenario that relates to the issue of AI needing specific cultural understanding in helping with genealogical research.

4. **Simulation**: Lead students through an interactive activity exploring the possible ethical considerations.
5. **Discussion**: Ask whole-class questions to reflect on experience and consider perspectives.
6. **Assessment**: Verify student understanding with an exit ticket.

1. Before You Watch

Option 1: Family Tree Sketch – Ask students to quickly sketch a basic family tree including themselves, their parents, and if possible, grandparents or great-grandparents. This will make the concept of genealogy more personal.

Option 2: Cultural Name Game – Briefly discuss how names can tell a lot about a person's cultural background. Have students say their names and, if applicable, share any cultural, historical, or family significance behind them.

While You Watch: Mention these topics and questions for students to look out for as they watch the video:

- What is genealogy, and how is AI impacting its study?
- In the video, why is privacy described as being a major concern when using AI for genealogical research?
- How does AI struggle with maintaining cultural respect in genealogical research?

2. Video Summary

The video addresses the transformative role of AI in genealogy, portraying it as a time-traveling detective that brings family histories to life, uncovers hidden connections, and animates ancestral stories. However, it also addresses the significant ethical considerations, emphasizing the importance of privacy, accuracy, and cultural respect in handling delicate personal histories. Ultimately, the video depicts AI as a bridge to our past and future, highlighting its potential to enrich our understanding of heritage while advocating for a thoughtful, respectful approach to unfolding the tapestry of our family stories.

3. Case Study

Distribute or read Case Study handout.
Summary: A family's journey into their ancestral past using AI-powered genealogy services reveals the technology's limitations in grasping cultural nuances and historical depth. Challenges such as cultural oversimplification, historical misrepresentation, name confusion, and data privacy concerns highlight the complexity of accurately and respectfully representing a family's legacy. Addressing these issues requires a blend of improved cultural algorithms, robust privacy measures, and a collaborative approach between AI and human insight, ensuring that genealogical exploration enriches our understanding of heritage without compromising its authenticity.

4. Simulation

In this simulation, students take the role of AI that has to learn how to deal with naming conventions from a variety of cultures and languages around the world.

1. Distribute the student handout to each student.
2. The students will look at the names listed in the first column and see what they can learn by looking at the way the names are written and formatted.
3. Students should write down their observations after just looking at the names.
4. Some students may represent a culture or language mentioned on the sheet, or have specific knowledge, which will help them explain the important information.
5. After students look over all the names and respond to them, go through the information on the Teacher Handout. Explain the naming conventions for each of the cultures / languages and ask for student comments on each.
6. The group questions sheet can be printed on the back of the student handout, or distributed later, to gauge student understanding of the task.
7. Students should discuss the questions in small groups, and see what they can learn, or what new understanding they gain, about the task of implementing culturally responsive AI.

5. Discussion

These questions below are for the end of the simulation. They are also found on the **Group Discussion Questions** handout.

1. Understanding Cultural Context: How might AI struggle to understand the cultural significance behind the order of names or the use of certain terms like "bint" or "van den" in a genealogical context?
2. Identifying Family Relations: In cases where family names or direct lineage indicators (like 'son of' or 'daughter of') are not used or are used differently (e.g., Icelandic naming conventions), how might AI face challenges in accurately mapping family trees?
3. Handling Non-Western Naming Systems: How would AI cope with naming systems that don't follow the English-speaking first name-last name structure, such as in Burmese culture where names are part of the identity and don't necessarily indicate family relations?
4. Interpreting Birth Order Names: How might AI misinterpret names that indicate birth order, like the Balinese names Wayan or Ni Luh, especially when these names don't provide direct information about family lineage?
5. Respecting Cultural Diversity in Names: Reflect on the potential for AI to oversimplify or misinterpret names that have deep cultural meanings or that change form across different cultures, like Giannis Antetokounmpo's name. What are the implications of this for individuals and their understanding of their heritage?
6. Dealing with Common Names: In cultures where a large number of people share the same name, like Singh in Punjab, India, how could AI differentiate between individuals and avoid confusion in genealogical research?
7. Transliteration Challenges: Consider the challenges AI might face with names that have been transliterated from one alphabet to another, possibly altering

their pronunciation or meaning. How might this impact the accuracy of genealogical records?

The questions below may be used in full-class discussion after the simulation is complete.

1. In what ways did the simulation highlight the importance of cultural sensitivity in genealogical research?
2. How did the simulation change your perspective on the importance of data privacy in genealogical research?
3. What types of biases might AI introduce into genealogical research, and how can they affect our understanding of our family history?
4. How do you think human oversight can complement AI in genealogical research to ensure accuracy and cultural respect?
5. Who do you think should be responsible for ensuring that AI systems used in genealogy are ethical and respectful of individuals' histories?
6. Can you think of a situation where AI might misrepresent someone's cultural heritage? How would that impact the individual or the community?
7. How does the potential for errors in AI-driven genealogy affect your trust in technology for personal research?
8. How do you envision the future of genealogical research with the integration of AI, and what steps should be taken to address the ethical challenges discussed?

6. Assessment

Exit Ticket: Provide a prompt for students to reflect on their learning, such as:

- What limitations of AI in understanding complex human narratives were evident during the simulation?
- How did the simulation make you feel about your own family history and the importance of accurately preserving it?
- What is your biggest takeaway from this experience?

Sources to Learn More

- Ancestry.com's handwriting recognition AI, mentioned in the video: https://www.ancestry.com/corporate/blog/ancestry-proprietary-artificial-intelligence-powered-handwriting-recognition-technology
- MyHeritage.com's Time Machine: https://www.myheritage.com/ai-time-machine
- MyHeritage.com's Deep Nostalgia: https://www.myheritage.com/deep-nostalgia
- How major companies use AI: https://www.legacytree.com/blog/using-ai-for-genealogy-research
- A genealogist's guide to AI: https://familytreemagazine.com/resources/software/ai-and-genealogy/

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Case Study: The History of the Nguyen Family

Imagine the Nguyen family, excited to discover their roots using an AI-powered genealogy service. They hope to learn about their ancestors, traditions, and the stories that shaped their family. However, what if the AI, with all its smart algorithms, doesn't fully understand their deep cultural nuances and rich history? AI in genealogy might misinterpret or oversimplify a family's past.

Background Information

The Nguyen family, with a heritage rooted in Vietnam, represents a tapestry of rich traditions and historical resilience. Vietnamese culture is renowned for its intricate family values, traditional festivals like Tết Nguyên Đán, and a strong sense of community. Genealogy, the study of family history, often involves piecing together documents, photos, and stories to form a family tree. Recently, AI has stepped into this field, promising to uncover long-lost connections and simplify the search through historical records. However, AI's understanding of deep cultural subtleties and historical contexts can sometimes be limited, posing challenges in accurately representing a family's legacy.

The main dilemma arises when the AI, used by the Nguyen family, starts to interpret and present their family history. Several issues surface:

- **Cultural Oversimplification**: The AI might not grasp the full significance of cultural practices, reducing rich traditions like the Lunar New Year to mere dates and superficial descriptions.
- **Historical Misrepresentation**: Important historical nuances, like the family's role in local events or migrations, might be inaccurately depicted, losing the depth and emotional context behind these stories.
- **Name Confusion**: The AI could misinterpret the structure and meaning behind Vietnamese names, especially a common name like Nguyen. This can lead to confusion and a loss of identity.
- **Data Privacy**: There's also the worry about how the family's sensitive information is handled and protected by the AI system.

Possible Solutions

Addressing these challenges involves multiple approaches, including **enhanced cultural algorithms** to recognize and respect cultural nuances, **privacy safeguards** to ensure that families feel secure about their personal histories, and **human-AI collaboration** to offer the efficiency of AI and the cultural insight of humans.

Conclusion

The story of the Nguyen family highlights the potential and pitfalls of AI in genealogy. While AI offers exciting possibilities in uncovering our past, it's crucial to navigate this journey with care, ensuring that the technology respects and honors the depth of our heritage.

Reflect on this

- How can we ensure that AI becomes a respectful ally in our quest to understand our roots?
- What steps would you take to protect your family's stories and ensure they are told accurately and thoughtfully?

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Teacher Handout: Naming Conventions

Genealogical research can be extremely difficult around the world due to naming conventions. Play the AI in this activity where you see how much you can figure out about people based on their names. Names are in the first column, and the countries or languages are in the second column. Make an educated guess in the third column about something you can learn about them by their names. Also, how would you alphabetize?

Name	**Origin**	**What can you learn?**
Ba Kaung and Daw Mya Aye have a son called Saw Tin	Burmese (Myanmar)	No first or last names – All names are part of the identity of the person, and family names may not relate.
Many people are known as Wayan and Ni Luh	Balian, Indonesia	Balian people are named by birth order; these names mean first-born son and daughter. They have no family names.
Björn Jónsson's son is named Hafthór Björnsson	Icelandic	Last names only mention their direct ancestor and are not passed down. (Phone books are listed by first name)
Maria Zapatero and Juan Ávila have a son, José Ávila-Zapatero	Spanish-speaking cultures	Often a child takes both parents' last names.
Aisha bint Abu Bakr's father does not have the same last name she has	Arabic	Bint = "daugher of"; Arabic names don't really have last names; Her father is Abu Bakr, or possibly the father of Bakr
Johannes Diderik van den Heuvel	Dutch	Family names often have multiple prefixes like this. This compound last name means "from the hill" in Dutch.
Giannis Antetokounmpo	Nigerian / Greek	Born in Greece, to Nigerian parents; His Nigerian name, written in English after being transliterated in Greek alphabet
Lee Chae-Yeong	Korean	Lee is the person's family name, and Chae-Yeong is her given name, meaning something like "Jade-colored"
Many people have the same middle name, Singh	Punjab, India	Sikhs often use middle names Singh (lion) or Kaur (princess), after having abandoned caste names.

Sources: Cultural Atlas, Behind the Name, Bali.com, Toppan Digital, MyHeritage, Religion Facts, Dutch Genealogy, The Collector

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Simulation Activity Handout: Naming Conventions

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Group Discussion Questions

Understanding Cultural Context: How might AI struggle to understand the cultural significance behind the order of names or the use of certain terms like "bint" or "van den" in a genealogical context?

Identifying Family Relations: In cases where family names or direct lineage indicators (like 'son of' or 'daughter of') are not used or are used differently (e.g., Icelandic naming conventions), how might AI face challenges in accurately mapping family trees?

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Transliteration Challenges: Consider the challenges AI might face with names that have been transliterated from one alphabet to another, possibly altering their pronunciation or meaning. How might this impact the accuracy of genealogical records?

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Video Script for Animator

Hello Young Innovators! Today we're discussing the ethics of AI in genealogical research
Title Screen

Welcome to our exploration of Artificial Intelligence, or AI. Today, we're exploring how AI is transforming genealogy, the study of families and their histories. Imagine AI as a detective, uncovering long-lost family secrets and connecting dots in our family trees that we didn't even know existed!

[Socrat narrating throughout, facing the viewer.
Visual: Show a family tree up on the wall. Socrat pulls out a magnifying glass and detective hat, puts the hat on his head, and starts examining the family tree. Example image: https://i.imgur.com/mzf7OgG.png]

In genealogy, AI is like a time traveler, whisking us back to the past and helping us meet ancestors we never knew. Imagine you're looking for your great-great-grandfather, John Smith. With AI, instead of searching through mountains of papers, you enter his name into a computer, and voilà! AI brings you a list of potential relatives and historical records, like a magical history book that writes itself!

[Visual: In a house. Show a child typing on a computer. On the monitor, a family tree is displayed. A picture pops up on the screen. Example image: https://i.imgur.com/9py885X.png]

AI in genealogy isn't just make-believe; it's real and happening now! For instance, ancestry.com used AI to read hand-written 1950 Census records, turning old handwriting into searchable text. And MyHeritage's AI goes further, animating photos of our ancestors, making it feel like they're right here with us!

[Visual: A weathered, yellowed old document that has handwriting on it and a photo. The text glows and the image comes to life, with an old image of a man with a large mustache, waving or smiling. Example image: https://i.imgur.com/HNYs4pR.png]

And it's not just for fun; AI helps solve mysteries too. FamilySearch's AI transcribes old documents, filling in blanks in our family stories. These aren't just names and dates; they're real-life adventures, love stories, and tales of bravery, all waiting to be discovered.

[Visual Cues: Show a mystery chest opening with AI light beams. Example image: https://i.imgur.com/zSNaMwW.png Then the image zooms into the box, and inside is a scene of a heartwarming family reunion. Example image: https://i.imgur.com/H8OTuWU.png]

While AI opens doors to our past, it also opens a window to potential misuse. Privacy is a major concern. Family histories are personal, and without robust protection, sensitive information could be exposed or misused, leading to identity theft or unwanted public exposure of private life stories.

[Visual: The camera zooms back out from the box, and Socrat closes the box, and slaps a a lock on the outside of it. Example image https://i.imgur.com/JyMZ6Wi.png]

And what about the stories AI tells us? Accuracy and cultural respect are essential. AI has a lot of information, but it doesn't know everything about every place in the world. This could lead to inaccurate reporting. For example, if the AI didn't understand Vietnamese naming conventions, it might connect people to the wrong family tree.

[Visual Cues: Socrat pulls out a big book. The image zooms in on the book as pages turn, revealing pictures of Vietnamese people. One of the images moves onto a Family Tree, but then it gets a red X over it demonstrating that it is in the wrong place. Example image: https://i.imgur.com/i5lq1AT.png]

AI in genealogy is like a bridge between our past and future, helping us understand where we come from and how we're all connected. But it's more than just technology; it's about people, memories, and hearts coming together. As we journey through our family histories with AI, we need to make sure it has care, consideration, and respect for every tale waiting to be told.

[Visual: Scene shifts to an image of a bridge. On the left side of the bridge is a historical landscape with sepia tones. On the right is a futuristic connected city. Old-timey people on the left and futuristic people on the right are meeting on the bridge. Example image: https://i.imgur.com/60fwbCu.png – DallE did NOT want to give me a bridge going from left to right, so this is kludged together from three images.]

Every family tree is a living story, a tapestry of time and love. And with AI as our companion, we're not just discovering the past; we're weaving the future.

[Visual: Zoom out on a vibrant, interconnected family tree spanning from past to future, with AI elements gently assisting in its growth. Example image: https://i.imgur.com/PwNLqkD.png]

Let's discuss: How can AI make connections in family trees that people miss?
[Display question on screen: How can AI make connections in family trees that people miss?]

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Video Script for Narrations

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