AI trained to predict nationality from beliefs and values

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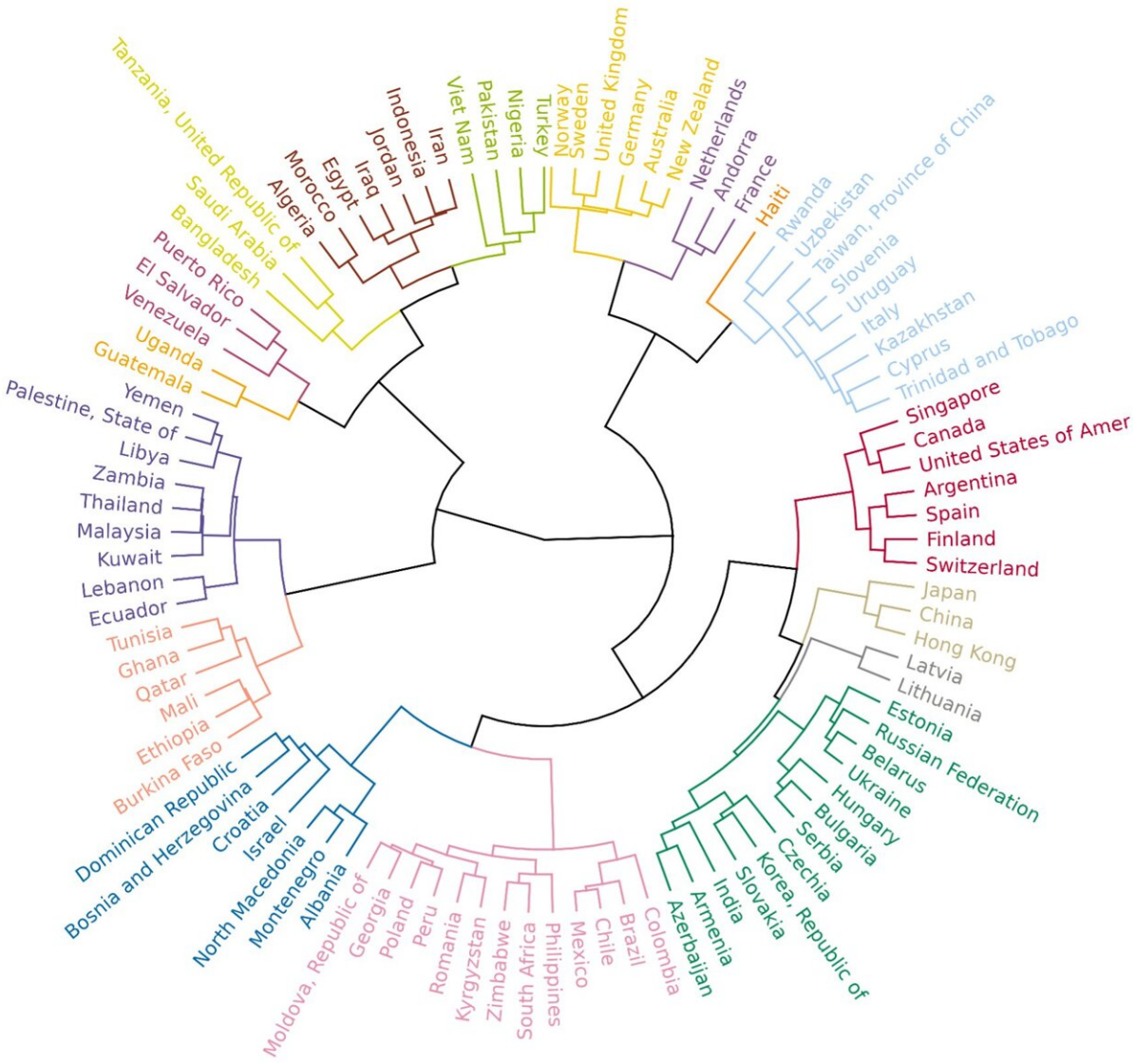

Dendrogram 1 plotted using country averages of 60 items of the machine

learning-based cultural values inventory. The dendrogram illustrates how countries are similar to and different from other countries in terms of their cultural values. Credit: Sheetal et al.

Different countries have different cultures, and social scientists have developed theories about which values are most important in differentiating the world's cultures. Abhishek Sheetal and colleagues used the power of machine learning to identify the crucial distinguishing characteristics of the world's national cultures in a theory-blind manner. The findings are published in the journal *PNAS Nexus*.

The authors trained a neural network to predict an individual's country of origin from their attitudes, values, and beliefs, as measured by the World Values Survey, a global study that probes everything from religious beliefs to political views. Given an unknown individual's survey responses, the model was able to determine which of 98 countries the person was from with 90% accuracy.

Out of nearly 600 possible predictors, the authors extracted the top 60 most predictive survey questions, including in first place, "To what extent do you think maintaining order in society is the most important responsibility of the government?" and in second place, "To have a successful marriage, how important is it that spouses agree on politics?"

Themes related to political attitudes, environmental attitudes, family values, and interpersonal relationships frequently appeared among the top 60 items, as expected based on broader research in the social sciences; however, there were also surprises.

Attitudes around the relationship between the government and society, gender roles, and marriage and family, which are seldom emphasized in

social science theories related to culture, were also important for identifying individuals' country of origin. The authors include case studies to illustrate the possibilities in the context of cultural differences in environmental behavior and social distancing during the COVID-19 pandemic.

According to the authors, the study demonstrates that machine learning-based models of cultural values can serve as a viable alternative to traditional theory-driven models of cultural values, and these models offer a new tool that cross-cultural social scientists and international business researchers can use to uncover novel explanations for cultural differences.

More information: Abhishek Sheetal et al, What values best distinguish the world's cultures? The machine learning-based cultural values inventory, *PNAS Nexus* (2025). DOI: 10.1093/pnasnexus/pgaf229

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