Contextual Alchemy: A Framework for Enhanced Readability through Cross-Domain Entity Alignment
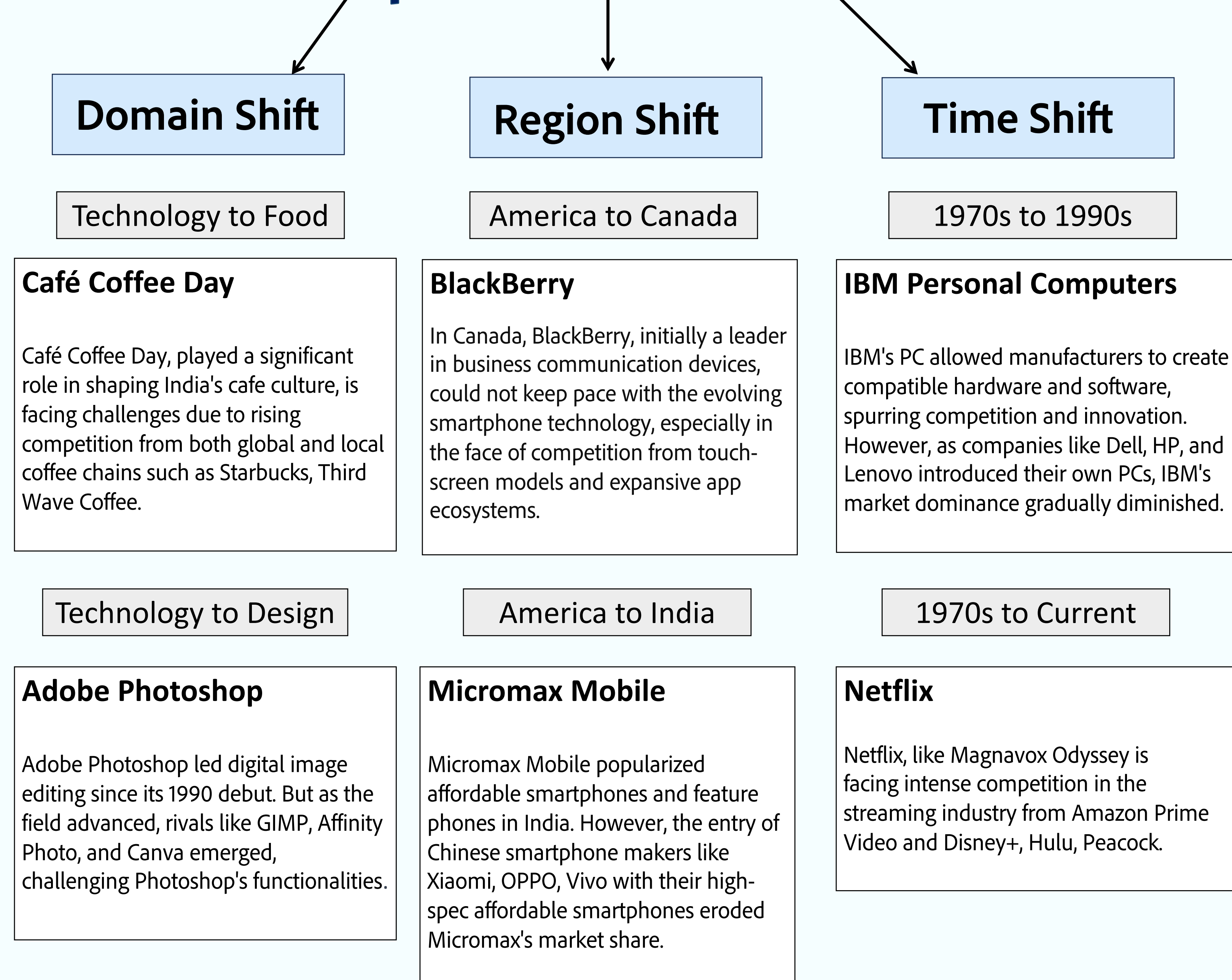
Simra Shahid, Surgan Jandial, Nikitha Srikanth, Balaji Krishnamurthy

Media and Data Science Research Lab, Adobe

Technology And Analytics | The Half-Truth of First-Mover Advantage

If a product's underlying technology changes very rapidly, the item quickly becomes obsolete. More often than not, such products are overtaken by versions from new entrants, which aren't burdened by maintaining and servicing older product lines and can innovate without fear of cannibalizing prior investments. Some researchers have used the term "vintage effects" to characterize the tendency of new generations of technology to usher in winning entrants. One can observe vintage effects in many product categories. In the gaming console market, which Magnavox Odyssey entered in 1972, at least six generations of technology emerged in rapid succession, each pushing forward a new winner. The same thing happened in hard drives and laptop computers. The Osborne 1, generally considered to be the first commercially available, truly portable computer, weighed 24 pounds and was soon superseded by lighter models. But laptop technology evolved so quickly that each successor, after briefly achieving dominance, was soon supplanted itself.

Update References

Domain Shift → Technology to Food

Café Coffee Day

Café Coffee Day, played a significant role in shaping India's cafe culture, is facing challenges due to rising competition from both global and local coffee chains such as Starbucks, Third Wave Coffee.

Region Shift → America to Canada

BlackBerry

In Canada, BlackBerry, initially a leader in business communication devices, could not keep pace with the evolving smartphone technology, especially in the face of competition from touch-screen models and expansive app ecosystems.

Time Shift → 1970s to 1990s

IBM Personal Computers

IBM's PC allowed manufacturers to create compatible hardware and software, spurring competition and innovation. However, as companies like Dell, HP, and Lenovo introduced their own PCs, IBM's market dominance gradually diminished.

Technology to Design

Adobe Photoshop

Adobe Photoshop led digital image editing since its 1990 debut. But as the field advanced, rivals like GIMP, Affinity Photo, and Canva emerged, challenging Photoshop's functionalities.

America to India

Micromax Mobile

Micromax Mobile popularized affordable smartphones and feature phones in India. However, the entry of Chinese smartphone makers like Xiaomi, OPPO, Vivo with their high-spec affordable smartphones eroded Micromax's market share.

1970s to Current

Netflix

Netflix, like Magnavox Odyssey is facing intense competition in the streaming industry from Amazon Prime Video and Disney+, Hulu, Peacock.
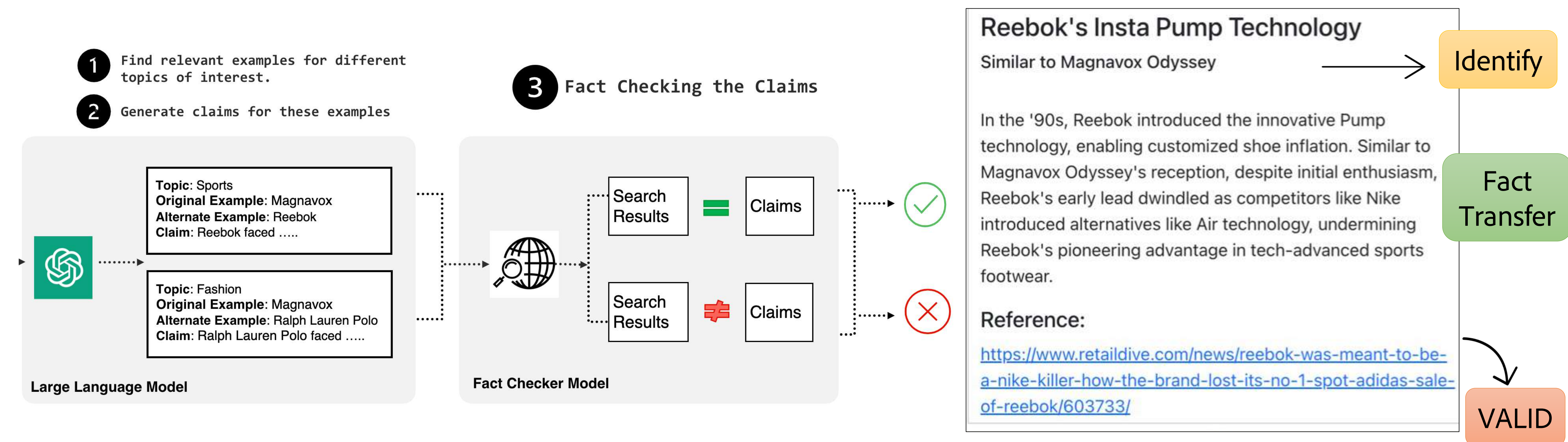
Problem Statement

Readability has been predominantly looked from the lens of *simplification* like 'Explain it to me like I'm five' and *personalised explanation* like 'Explain to me like I'm a scientist'. While simplification aids comprehension, it can also strip texts of their nuanced author voice, potentially introducing biases.

To the best of our knowledge, this is the first work which looks at Readability from the lens of Fact Transfer, where only examples are matched to similar examples in **different domain, geographical region, and different time period.**

Our Framework

1. Find relevant examples for different topics of interest.
2. Generate claims for these examples
3. Fact Checking the Claims

Large Language Model

Topic: Sports
Original Example: Magnavox
Alternate Example: Reebok
Claim: Reebok faced ......

Topic: Fashion
Original Example: Magnavox
Alternate Example: Ralph Lauren Polo
Claim: Ralph Lauren Polo faced ......

Fact Checker Model

Search Results = Claims ✓

Search Results ≠ Claims ✗

Reebok's Insta Pump Technology

Similar to Magnavox Odyssey → **Identify**

In the '90s, Reebok introduced the innovative Pump technology, enabling customized shoe inflation. Similar to Magnavox Odyssey's reception, despite initial enthusiasm, Reebok's early lead dwindled as competitors like Nike introduced alternatives like Air technology, undermining Reebok's pioneering advantage in tech-advanced sports footwear.

Fact Transfer

Reference:
https://www.retaildive.com/news/reebok-was-meant-to-be-a-nike-killer-how-the-brand-lost-its-no-1-spot-adidas-sale-of-reebok/603733/

VALID

1. **Entity Identification:** Utilize an LLM to detect entities within a text and their context.
2. **Fact Transfer:** Prompt LLM to identify similar entities with an array of interest vocabulary to generate suitable entities and claims fitting the context.
3. **Validation of Transferred Fact:** Validate the generated claims using top documents retrieved from the web and perform fact checking with Natural Language Inference methods (ROBERTA-LARGE).

Finally, our framework presents the alternate fact, claim, and reference from web.

For the paper and more examples, scan the QR code.

SCAN ME