cAR: Contact Augmented Reality with Transparent-Display Mobile Devices. Hincapié-Ramos, et al. PerDis. 2014.

What are the core research questions addressed by the work?

- What interactions are possible with a transparent display coupled with paper entities?
    - Particularly from the perspective of being able to physically move the transparent display device on top of the augmented entity

What motivates the work?

- Vision that print material is intertwined with rich amounts of digital contentUsers place value on physical experiences, like paging through an album or holding a newspaper

How does the work understand the usage, capabilities, and limitations of paper?

- Wall posters, newspapers, book pages, are all associated with far more content, and in much more diverse formats, than is possible to etch in ink.
- They contain affordances worth-while preserving.
- Paper is a tangible medium.

What is the target application domain of the work?

- Active reading

What are some proposed extensions to paper proposed by the work?

- Extending the content displayed on the physical paper entity with additional, dynamic information - Access to information not already included in the physical object.
- Proposes three interaction modalities: contact-based, off-contact, content-aware
    - Contact-based interactions involve interacting with the augmented paper object via touching it with an auxiliary device
    - Off-contact interactions involve interacting with the augmented paper object via performing gestures around it, without contact
    - Content-aware interactions involve interacting with the paper object with reference to its content. For instance, triggering interactions via identifying words of a text document or more broadly from physical regions on the paper entity.

How are the proposed extensions implemented?

- A custom transparent tablet prototype
    - Broadly speaking, a handheld transparent display

What are the results of the work? What are the implications of the results for future designs and implementations of paper-based technologies?

- Modeling the paper document or entity being augmented is still an open challenge.
- Camera-based registration - determining the location and orientation of the device relative to the object it augments - is not perfect.