GazePair: Mixed Reality Device Pairing

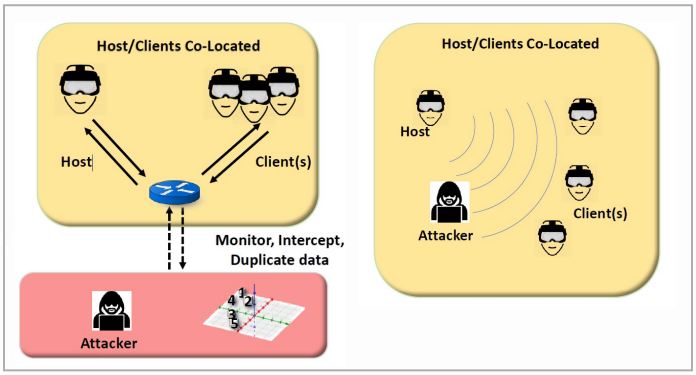
VTIP 22-116: "GazePair: Efficient Pairing of Mixed Reality Devices Using Gaze Tracking"

THE CHALLENGE

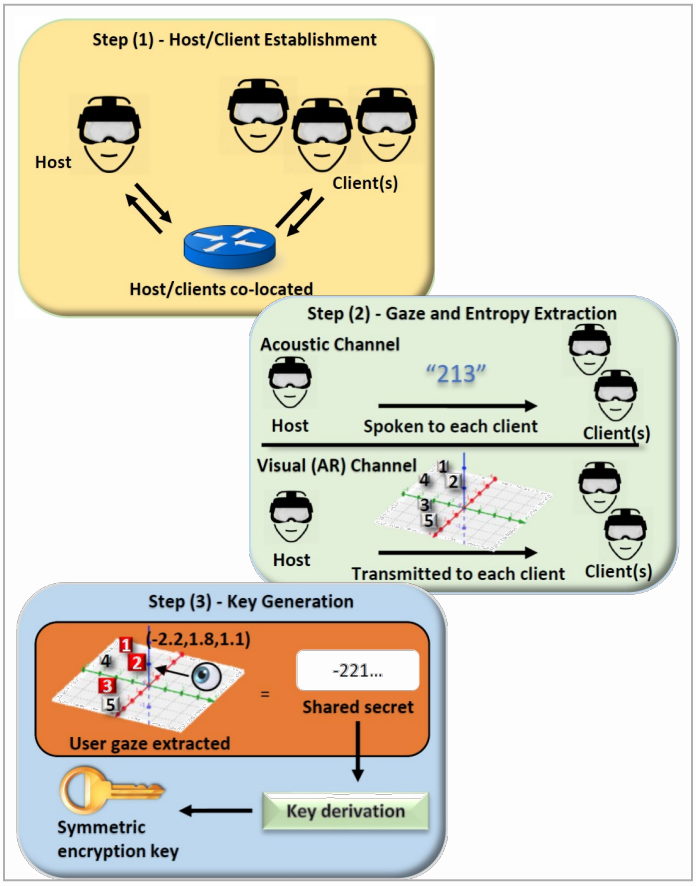
The Global Augmented Reality (AR) market was recently estimated to be just under $15 billion, and is expected to grow by nearly 600% by 2026. As this market continues to grow and AR devices become ubiquitous, the need for quick, efficient, and secure methods for pairing these devices will become vital. Most pairing methods currently in use require users to send this information through large data centers, creating security and privacy concerns. Existing local pairing techniques fall short in terms of usability and scalability. These techniques require hardware not available on all AR devices, intricate physical gestures, or removal of the device from the head. Other issues with the current state of the are is the inability to scale up to multiple pairing partners, or a reliance on methods with low entropy to create encryption keys.

OUR SOLUTION

This new technology invented by Bo Ji and his team uses eye gaze tracking and a spoken cue to allow for the secure, local pairing of Mixed Reality (MR; including augmented and virtual reality) devices that can be scaled to include multiple users. As a system, GazePair is intuitive, efficient, and effective using the creation of a shared secret to create symmetric encryption keys to secure communications between two or more MR users. GazePair also achieves improvements in pairing success rates and times over current methods. Arguably the most important feature of GazePair is its compatibility with any MR device equipped with eye gaze tracking.



Attackers with access to local networks can intercept traffic. Attackers with physical proximity can hear vocal interactions between users.



GazePair's three main steps to key generation and device pairing.

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