



An approach towards understanding makerspaces through side-channel data streams

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Abstract:

Makerspaces are fostering the democratization of manufacturing across the world. Manufacturing is no longer limited to large corporations with well-established facilities. A collaborative space in which local communities with a common interest could get together, share ideas can utilize readily available design, technology, and manufacturing tools to innovate and develop capabilities to fabricate complex parts. It is reasonable to expect a future in which advanced product development and manufacturing could be accomplished through a distributed network of makerspaces with varying capabilities and access to different resources. Nuclear proliferation in the future could be aided not only by having the ability to manufacture critical reactor components but also to build deployment vessels like drones, UGVs, etc. Makerspaces already have access to an abundance of fabrication equipment used to fabricate these deployment vessels, that are not currently controlled by export control laws/treaties. Moreover, makerspaces attract community members with various backgrounds and skills, making it challenging to assess a makerspace's capability solely based on hard physical assets. A multipronged approach is hence necessary to understand and qualify the capabilities of makerspaces. The presentation will discuss an approach developed to classify makerspaces based on the various relevant parameters. Recent strategies were designed to collect side-channel data to support the classification system. Specifically, efforts to collect IoT based non-invasive, side-channel machine usage data gleaned from current, vibration, and temperature sensors will be presented.