Abstract
Capcell is designed to automate and augment the object classification/detection operation through the ability to process an image on a mobile device replete with geolocation data or send a raw image to a remote server for external processing. Capcell uses Darknet’s robust neural network framework to detect electronic objects and may therefore be trained to identify and catalog any multitude of objects for specialized use in any context where rapid pictorial cataloguing of environmental objects may be required.

Summary
Take a picture or upload an image to classify and catalogue visible electronic devices, then seamlessly store geotagged, labelled images on a remote server. Train using custom data-sets to tag and store specialized classes of objects.

Results
Our program may be trained to function as a real-time inventory system with any collection of objects, rapidly detecting and cataloguing objects through a continuous feed of high-definition images, potentially allowing for accurate tracking of products and inventories across warehouses, libraries; in short, the program may be utilized wherever it is crucial to inventory the movement and location of large numbers of items.

Performance
Our system uses Darknet’s pre-trained weights for classifying and labelling detected electronic devices. Having processed several images over different resolutions and lighting setups, the system has trouble differentiating between television screens and laptops though is otherwise fairly accurate. Additionally, the image upload and download sync times may range from a few seconds to several minutes depending on the mobile phone’s network setup.