

MICHIGAN STATE
UNIVERSITY

Project Plan Smart Camera

The Capstone Experience

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*From Students...
...to Professionals*

Functional Specifications

- Assist amateur filmmakers in creating high quality and engaging video content for training or demo purposes
- Factors that contribute to less than ideal content
 - No planning
 - Bad Lighting
 - White balance
 - Poor framing of shots
 - Scripts

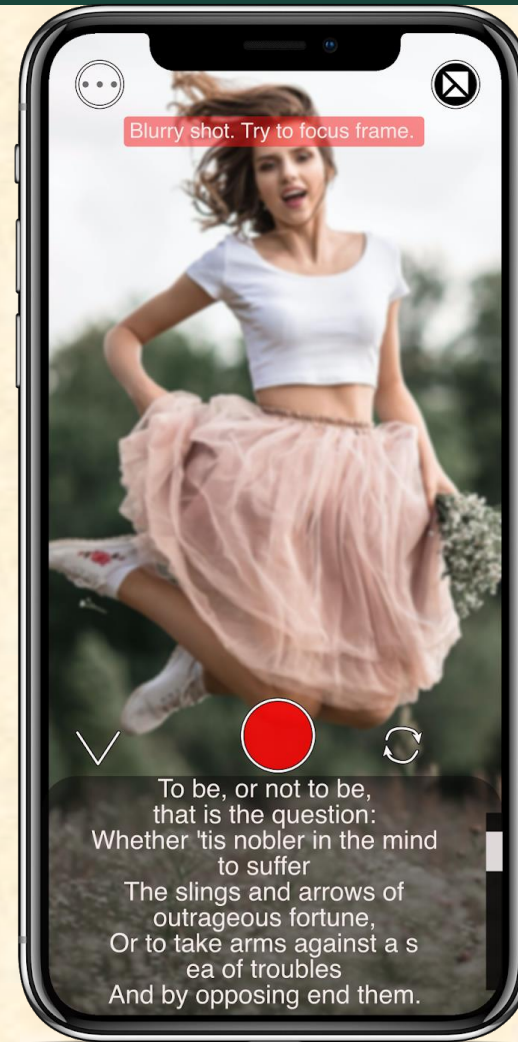


Design Specifications

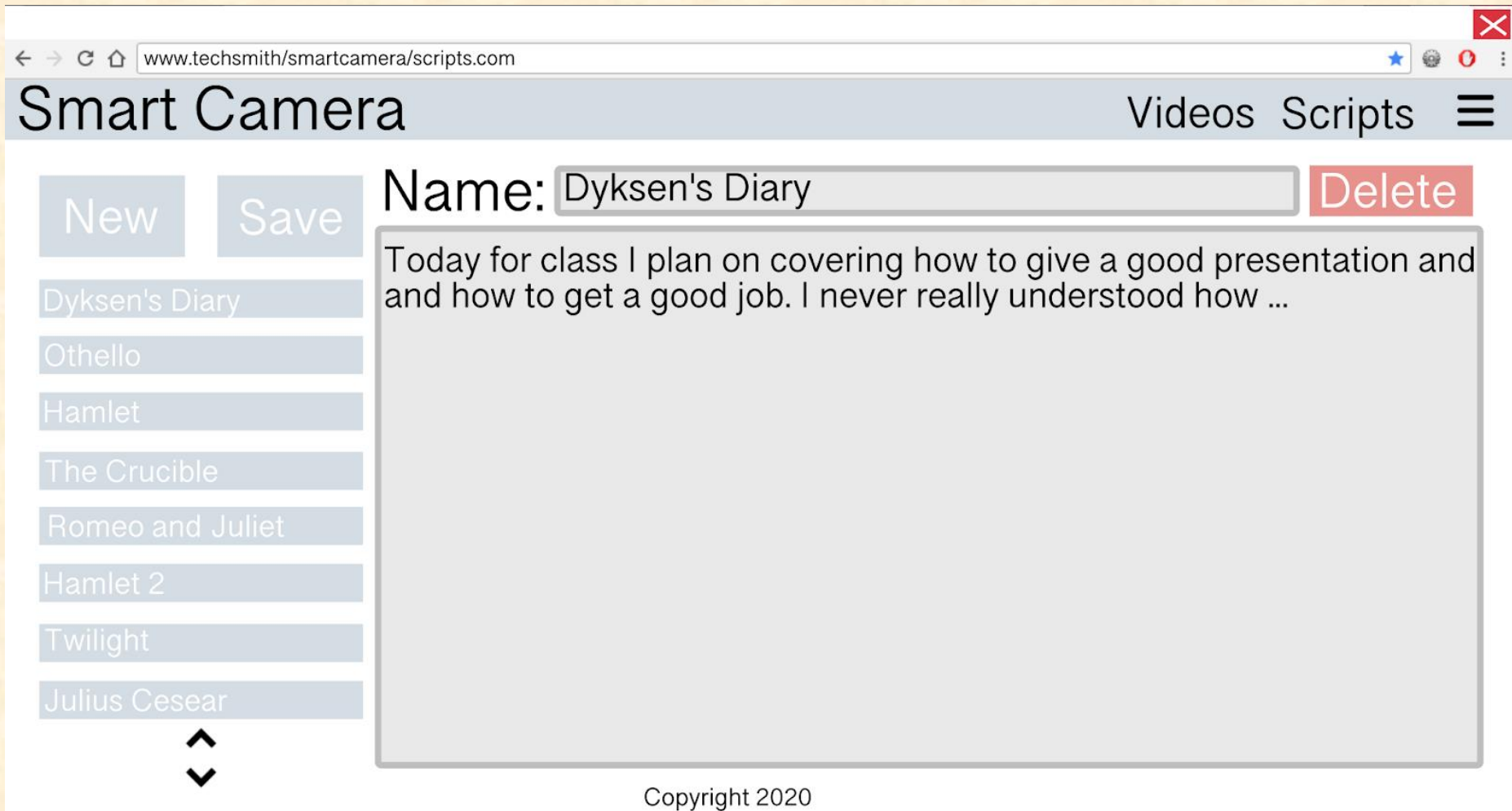
- Website contains a page for creating scripts and a page for viewing videos imported from app
- App features a scalable teleprompter to read scripts while filming
- App presents feedback of video quality at top of the screen during use



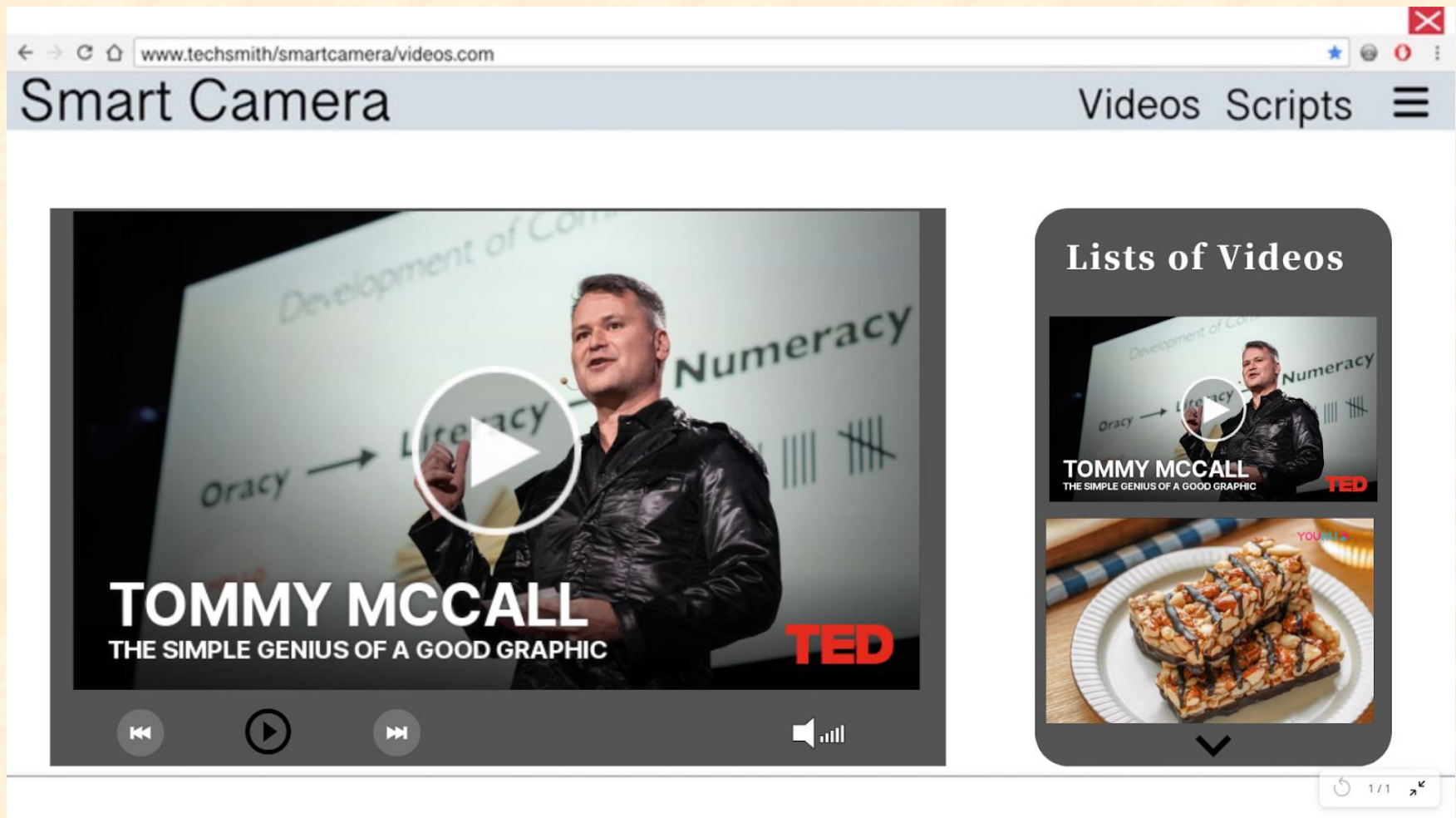
Screen Mockup: iOS Application



Screen Mockup: Web Interface



Screen Mockup: Web Interface

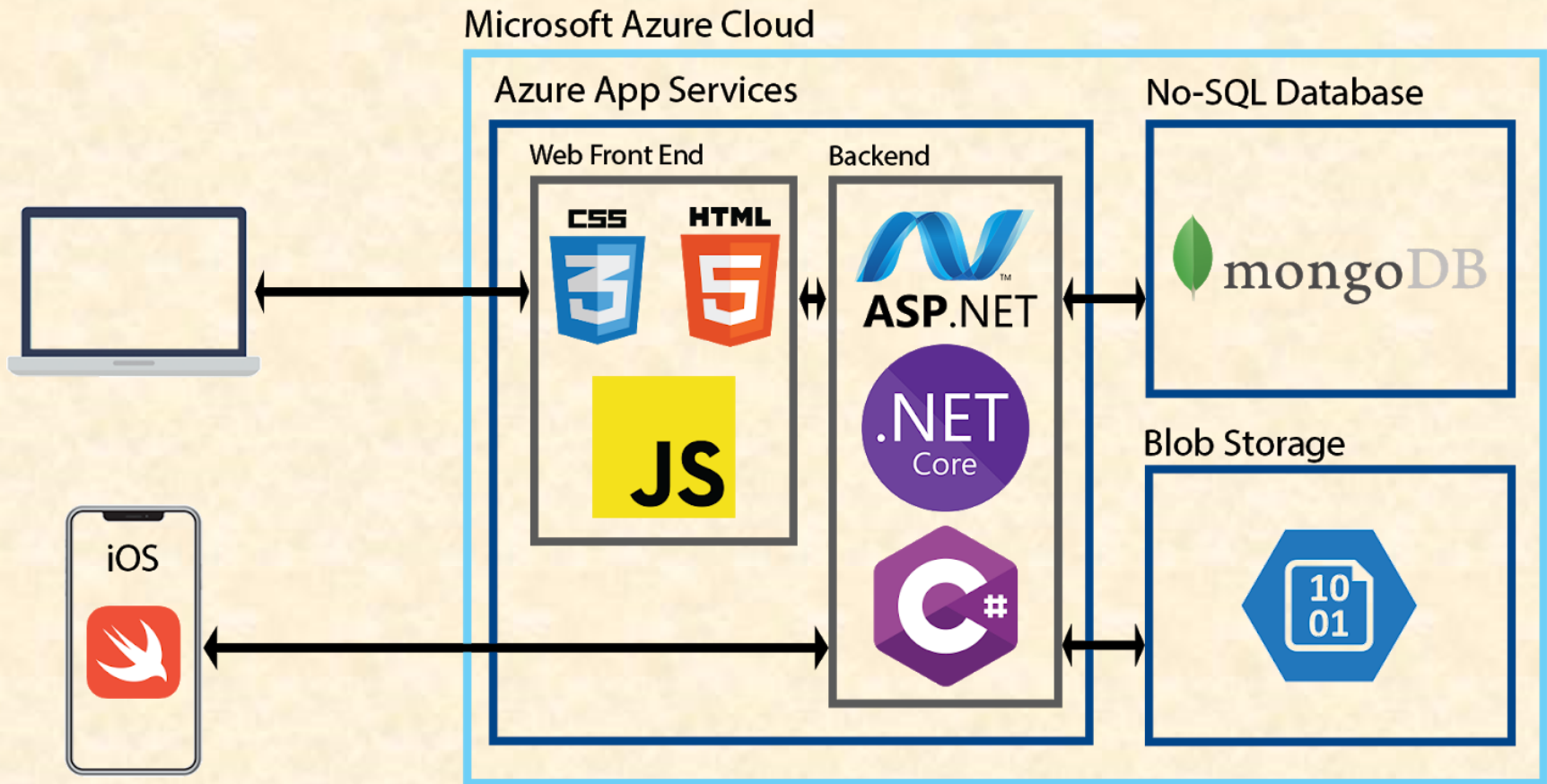


Technical Specifications

- Mobile
 - Apple iOS app created using Swift5 in Xcode 11
 - Vision framework used for face detection
- Web
 - HTML, CSS, and JavaScript for website
 - .NetCore for website (C#)
 - Docker for developing, testing and deploying
 - Microsoft Azure
 - Hosting backend, MongoDB, video Blob Storage



System Architecture



System Components

- Hardware Platforms
 - iPhone 11
 - iMac/PC
- Software Platforms / Technologies
 - Apple iOS 13.3
 - Azure Cloud
 - Various web browsers



Risks

- Limited Screen Real Estate
 - The application will be designed to display a teleprompter towards the bottom half of the screen, but there is a risk that it could disrupt the camera view and obscure some of the screen
 - Default the teleprompter to take up around 30% of the screen and make it partially transparent. Allow users to manually change the size of the teleprompter.
- Working with older devices
 - Older iPhones have older hardware and software, and some features may either not be available or work poorly on these devices. Their device may not be able to properly analyze the lighting or framing.
 - When using the application, a warning message will prompt the user that some features could either be disabled or not work as expected.
- Inexperience with film creation
 - Our lack of film creation knowledge could slow development of the important smart features designed to assist users in creating better quality content. We do not currently possess the necessary knowledge to immediately attempt to implement these features.
 - We have reached out to our connections that are hobbyists or professionals that understand how to create video content at a high level and are willing to work with us.
- High demand for processing power
 - Previous iterations of iPhones may not have the necessary processing power. This could cause the phone to slow down during recording which may have a large impact on recorded videos.
 - Instead of processing every frame that the camera sees, we can have the app only process a frame every set interval of time.

