Analyzing Ultrasonic Voc alizati on-Evoke d Changes in Rat Fac iala

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exploratory-behavior being a direct indicator of anxiety and depression in rodents have only been validated in male rats. Previous research in the Honeycutt Lab identified conflicting displays of anxious behavior in male and female rats. These limitations of current testing methods present significant challenges in attempting to understand the complexities and individual differences in the emotional states of laboratory rats.
Inspired by The Rat Grimace Scale, a pain assessment tool that compares the presence of certain facial
expressions, we induced positive and negative emotional responses in our subjects by using two different frequencies of ultrasonic-vocalization (USV) playback (Sotocinal et al., 2011). USVs are a type of communication used by rats that humans are unable to hear and are effective in eliciting emotional contagion in rats (Demaestri et al., 2019 & Saitom et al., 2016). We recorded videos focusing on the rats’ faces which was then used to train a DeepLabCut network to detect 15 points on the rats faces for analysis. After habituating our 10 Sprague