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Project Proposal

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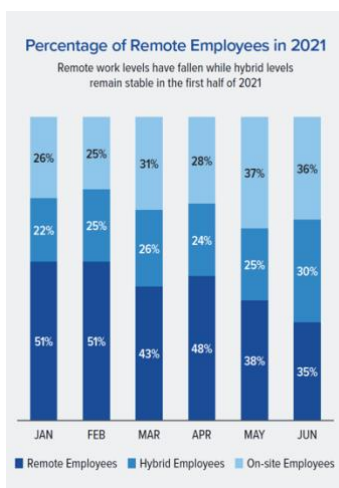
Created for :

Rensselaer Polytechnic Institute

SEC 01

Project Name :

Digital Penmanship

Project Timeline :

2 years

Percentage of Remote Employees in 2021
Remote work levels have fallen while hybrid levels remain stable in the first half of 2021

Citations

1. https://www.forbes.com/sites/gadlevanon/2020/11/23/remote-work-the-biggest-legacy-of-covid-19/?sh=6903b4d77f59

Project Description

Problem Statement :

Remote working has led to a decrease in interpersonal relationships among co-workers, which can negatively impact an organizations growth

Problem Description :

COVID-19 has had a lasting impact on the workforce in America. Before the pandemic, only **5% of employees were reported to be fully remote**.[1] Today, the percentage of the fully remote workforce is 20-30%,[2] and an even greater number of workers who report being hybrid (splitting their time between at home and on-site).[3]

While the shift **towards remote work has helped increase the talent pool that companies can hire from and created a more flexible work environment for employees,**[4] it has also created problems surrounding workplace culture and interpersonal relationships. With the continued increases in remote and hybrid workers, more communication occurs asynchronously (via email and IM) and less synchronously (in person, phone calls, and video chats).[5] While asynchronous communication can be more efficient, it distances individuals from each other and results in more miscommunication. To try and maintain the on-site culture within remote working, companies have turned to group e-events and other team bonding tools to help bridge the gap that the distance of remote working has created.[6] While these events can help boost company morale; their effects are not long-lasting. Instead, a more impactful solution would be to augment the asynchronous communication creating more space for the individual within their message.

Citations

1. https://www.forbes.com/sites/gadl evanon/2020/11/23/remote-work-the-biggest-legacy-of-covid-19/?sh=6903b4d77f59

Benefits of Interpersonal Relationships

Interpersonal relationships in remote teams contribute to the organization's growth in five key ways:[6]

1. Enhancing Trust
2. Facilitating Innovative Thinking
3. Improving employee satisfaction
4. Improving job retention
5. Improving employee engagement

Repercussions of Not Having Strong Interpersonal Communication

A report from The Economist Intelligence Unit highlighting communication barriers in the workplace found that:

60% of participants reported using email every day, but only 40% of the participants said that they thought it was an effective communication tool.

44% of participants reported that barriers within the communication process resulted in either a delay in project completion or failure

31% reported low morale

25% reported missed performance goals

18% lost sales

SEC 02

Solution

A SaaS (Software as a Service) product that uses how someone types (their keystroke biometrics) to alter the depiction of their message on a screen, providing additional context to the message.

Product

Key Terminology

Keystroke Biometrics: the detailed timing data for when a key was pressed and released

Variable Fonts: a single font file that contains multiple variants of a font

Platforms to Extend

Slack

Teams

Google Teams

Users

Employees of companies who subscribe to the service and add the extension to their communication platform.

Digital Penmanship :

Digital Penmanship is a SaaS (Software as a Service) product that uses how someone types (their keystroke biometrics) to alter the depiction of their message on a screen. This is achieved by using keystroke biometrics to interpolate various axes in a variable font. Digital Penmanship leverages what authentication technologies have identified as a limitation of keystroke biometrics—how you type is impacted by situational contexts such as the keyboard you are typing on, your emotional state, etc.—to encode an individual within their message. Much like a person's handwriting can serve as a representation of their identity, using Digital Penmanship, a person's message can act as an extension of themselves.

Unique Selling Proposition:

Type that responds to you.
A more personable form of asynchronous communication.
Communicate asynchronously without losing personality.
Get context within text based communication.

User Personas:

Supervisor Sally:

Sally is a supervisor at an up-and-coming tech company. The company Sally is working for is fully remote. While Sally has more than five years of experience in leadership roles, this is her first job working fully remote as a supervisor. The company Sally is working for recently started using the Digital Penmanship extension in Teams. The Digital Penmanship extension allows Sally to visually detect changes in her supervisees typing. By detecting changes in the supervisees typing Sally is able to get the additional context that is typically missing when communicating in text based platforms. As a result, Sally is able to better respond and support her team, making her more successful at her job.

Shy Sam

Sam is an engineer at an up-and-coming tech company. The company Sam works for is fully remote. Sam prefers to work remotely because he does not do well around large groups of people. Sam is a hard worker and is very detail oriented. Historically, Sam has had issues picking up on social cues. Sam often feels removed from the other employees because he can never tell if someone is joking or not. As a result, Sam doesn't usually stay working at a company for more than a few years. The tech company that Sam is currently work for recently added the Digital Penmanship extension to their Teams application. Using the application, Sam is able to pick up on the slight changes in his teammates typing, which has allowed him to form meaningful connections with his co-workers. Sam is happy to go to work everyday and plans on working at the company for the foreseeable future.

Customers

Companies of varying sizes that are either completely remote, partially remote, or hybrid.

Customer Profile

Tech Firm A :

Industry: Health
Remote, On-Site, or Hybrid: Fully Remote
Age of Company: Start-up company
Primary Communication Software: Slack
Company Size: 30 employees

Tech Firm B :

Industry: Government Contracts
Remote, On-Site, or Hybrid: Mixture between all three, but majority of employees are fully remote.
Age of Company: 10+ years
Primary Communication Software: Teams
Company Size: 300 employees
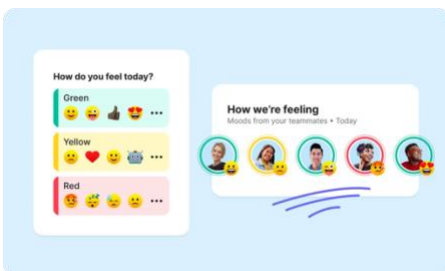
Publishing Company:

Industry: Education
Remote, On-Site, or Hybrid: All employees are fully remote
Age of Company: 70+ years
Primary Communication Software: Slack
Company Size: 10,000+ employees

Competitors

Range

Range is a platform designed to help facilitate better working remote and hybrid teams. Using the Range platform, employers can gain more visibility on project statuses and employees can build stronger interpersonal connections with one-another. Range offers a series of 'team building' features that include culture questions, team profiles, inter-team communication, and asynchronous team building. Individuals can also respond to a 'How are you feeling today' prompt, which shares with their team how they are feeling.

SEC 05

Work Process

Step 1

Meta Data Analysis

Preliminary research to shape later experimentation

Step 2A

Testing Environment

Research best way to test typing technology to make the experience more genuine. Perform small study to verify testing design.

Step 2B

AI Mapping

Build data model to compare predicted verses actual typing data

Step 3

Lean UI/UX Development

Iterative development. Build -> Test -> Adjust -> Build -> Test -> Adjust

Step 4

Building Extension

Create an extensions for the top chat based platforms for asynchronous communication, specifically designed for working remotely.

Process	2023															
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Survey Literature on Variable Fonts	■															
Survey Literature on Handwriting Analysis		■														
Open Source Data Sets (Variability)			■	■												
Research Testing Processes					■											
Create Testing Environment						■	■	■	■							
Small Scale Simulation										■						
Build Data Model						■	■	■	■	■	■					
Combine Simulation with Mapping													■	■	■	■

Process		2024								
		J	F	M	A	M	J	J	A	S
Iterative Development		■	■	■	■					
Building Extension						■	■	■	■	■

Required Resources

Additional Expenses

Hosting for Testing Environment

MongoDB for storing data for analysis

PubNub Subscription for sending messages through an encrypted channel

**These are all already configured and being paid for. I can continue to pay for them for the foreseeable future.

Initial Personnel:

A developer who is familiar with build AI technology and knows how to build a predictive modelling application. This is required because type needs to be rendered before a key is actually released. We will need to predict the value for keypress duration based on other key factors.

Down-the-line

Individual who is an expert at configuring servers and ensuring everything is secure.

As we define future implementations, we will likely need to expand to include more developers and designers. To start, the main area that we will need support in is building out the data modelling.

Future Implementations

Supervisor/Manager Notification:

If an individual is reporting extreme changes in mood, meaning they appear to be upset or under a great deal of stress, application can notify manager, so that they can intervene.

Custom Font

Development of our own variable font that allows for different types of encoding that are not presently available in pre-existing ones. Can create multiple fonts so that people or companies can pick their preferred font.

Emotion Detection

Ability to detect changes in an individuals emotions or provide them insights into how they are coming across.