ENGR480 Manufacturing Systems - Spring 2013

Intellipaper Project
2013-02-28

Intellipaper LLC is a startup company in Spokane, started by a WWU alumnus, Andrew DePaula. He, with assistance from Dr.Larry Aamodt and others, is producing disposable paper data sharing devices that plug into USB ports. A user simply tears off a strip of paper from the card, folds it once or twice (depending on the card thickness), and plugs it into a USB port. The silver ink contacts printed on the card connect the USB signals and power to a tiny silicon chip embedded in the card.

Your project in ENGR480 this year is to develop a system for programming and testing these Intellipaper cards. Input to your system is a stack of cards ready for programming. Output from your system is two stacks of cards, one stack of successfully programmed cards, and one stack of rejects. Your system will need to connect four electrical contacts with the four conductive stripes on the card, wait for a good/bad signal from a PC, and then move the card to the good stack or bad pile. Your system needs to accomodate a wide variety of card sizes, from business card size to letter size, and USB contacts anywhere on the card, in any orientation.

Your will work in teams that I assemble. As a team you will choose a technology you would like to use for your machine. Choices are pneumatic linear and rotary actuators, stepper-motor driven linear and rotary stages, and Motoman robots. The paper can be transported by vacuum cup or rubber rollers. Your machine may be manually adjusted for card size and contact orientation, or you can incorporate machine vision to automatically determine positioning. Your machine will never be presented with a random assortment of card sizes or contact orientations. A stack of one type will be processed, then the machine can be "taught" the next type.

Goals to aim for are:
1. Minimum handling time per card
2. Simplest change over for card size and contact orientation
3. Maximum reliability

Examples of Intellipaper cards are shown on the next page.

START NOW

This card is your first lesson.

1) You don't need an Internet connection; the attached intelliPaper® tab slips into your USB slot!

2) Follow instructions to remove tab, fold, and place it in your computer.

3) Start learning!

1. Break off the USB tab to the left
2. Fold on line 1, fold again on line 2
3. Insert into USB connector
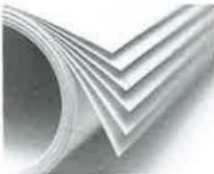
intelliPaper®

US patents 8047443, D62388; Other US and International patents pending. To learn more about intelliPaper, visit http://www.intellipaper.info

---

intelliPaper®

For people who prefer to work intelligently.

See how it works.

Begin with common paper.

Add digital intelligence.

Create a smart sandwich.

Discover how it can work FOR YOU.

Give us 30 seconds.
We will give you a brand new way to communicate.

US patents 8047443, D62388; Other US and international patents pending. To learn more about intelliPaper, visit http://www.intellipaper.info

1. Fold and break off this USB tab
2. Fold on line 1, and on line 2
3. Insert into USB port traces up

---

1. Break off USB tab with contacts
2. Fold on line 1, fold again on line 2
3. Insert into USB connector

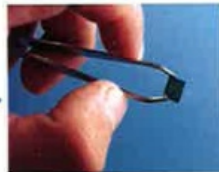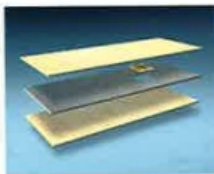US patents 8047443, D62388; Other US and international patents pending. To learn more about intelliPaper, visit http://www.intellipaper.info