

Team Number: ATC55  
School Name: Academy for Technology and the Classics  
Area of Science: Forestry  
Project Title: A Safer Way to Track Forest Fires

**Description:**

Our project focuses on finding a solution for the high rate of injuries, destruction, and death related to the difficulty of tracking forest fires. Today, in order to track fires, a manned jet must fly over the fire. This has many downfalls, as it puts the life of a person at risk, and does not allow for the ability to provide real-time data. Typically, the jet only flies over the fire once a day, so any data collected is only accurate right when it is taken. Due to the unpredictable nature of wildfires, much can change over the course of a day, making this a less than accurate way of tracking fires. Additionally, much of the tracking of the fires is done through hand-drawn replications of the path of the fire. This can lead to inaccuracies and is incredibly time-consuming. Our goal is to create a program that can take the human aspect out of tracking fires, making it safer and more efficient.

**Solution:**

We plan to solve this by using drone technology to send pictures of the fire directly to our program. The program will analyze the colors of the fire as well as outside factors, such as current wind speed. This, combined with the image of the fire, will lead the program to be able to determine the direction the fire is traveling, as well as where the hottest parts of the fire, and the origin.

**Progress:**

We have done research regarding wildfires and the current processes used for obtaining information about them. Through our research, we discovered that it is important to be able to transport the maps to handheld devices that are accessible to those trying to fight the fires or keep track of them. Currently, the mapmakers that do this are called the Geographic Information Systems Specialists. These are mostly hand drawn maps. There are also satellites that are able to capture images from a distance. Right now, there is new technology being developed by the NASA Ames Research center. They want to develop a thermal imaging sensor to map a fire's hotspots, location, and direction. Google Earth is also used as a reference tool. Other sources to record the fire involve a manned-jet flying over the fire, putting a life at risk as well as being too time consuming.

**Expected Results:**

Our program is expected to receive a picture and a thermal picture of a fire and convert them into maps which can be shared to other devices or broadcasted to civilians. It will analyze the fire to find which areas are hottest, which will aid in finding the origin of the fire. The program will be able to show where the fire is closest to civilians, housing, and important structures. It will also be able to tell in which direction the fire is traveling fastest. All of this

information will be accumulated through drones and our computer program, which will make the analysis of wildfires much easier and safer.

**Citations:**

<https://www.seattletimes.com/seattle-news/northwest/mapping-wildfires-how-they-do-it/>

<https://www.flightradar24.com/blog/fighting-fires-from-the-air/>

<http://www.arcgis.com/apps/MapSeries/index.html?appid=d66351001e954dacb376db567e81f31d>

<http://wildfiretoday.com/tag/tracking/>

<https://www.technologyreview.com/s/408595/mapping-wildfires/>

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