



STEMCA School of Robotics and Innovation Center
Inspiring the New Generation
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Follow by Color

Made with STEMCA App Inventor

This application shows how the **VideoCamera**, **TextToSpeech** and **Clock** components can be used to create useful and fun applications for **Android** devices.

The application could be used by visually impaired or blind people to follow a guide that carries a colored object (rounded balloon for example) as tracking object.

Login with your email to **STEMCA App Inventor** – <http://invent.stemca.com/>, create a new project and name it **follow_by_color**.

Drag in the **Viewer** the components shown bellow from the marked sections in **Palette**. Rename the components as shown in **Components** section.

The screenshot displays the STEMCA App Inventor web interface in a Mozilla Firefox browser. The project is named "follow_by_color".

- Palette:** The "Sensors" section is highlighted. A "VideoCamera" component is dragged into the Viewer.
- Viewer:** Shows a mobile app preview. A label "your new VideoCamera" is present. Below it, a table lists movement instructions based on radius and position. At the bottom, "Non-visible components" include "TextToSpeech1" and "Clock1".
- Components:** The "Components" panel on the right lists the added components: "VideoCamera1", "radiusMax", "radiusMin", "xMin", "xMax", "TextToSpeech1", and "Clock1".
- Properties:** The "Properties" panel on the far right shows the settings for "VideoCamera1", including "BallDetection", "CameraIndex", "ColorBlobDetection", "DetectEventTriggerInterval", "DetectionEventEnable", "FaceDetection", "Width", "PaintColor", "PictureOnTouch", "Resolution", and "Visible".



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Define the logic of the application in **Blocks** page as described bellow. Notice how the **Clock**, **VideoCamera** and **TextToSpeech** components are used.

The variables, control and math blocks used bellow can be picked from top of Blocks section on the left.

Challenges:

- Improve the app to give better commands when the guide disappears from the camera view
- Add scanning capability to help the user of the app to find the guide by scanning in circle
- Provide a way to set the **Clock** interval through the UI

Happy Inventing!

For more details about **STEMCA Inventor** platform follow: www.stemca.com, <https://twitter.com/stemcaedu>
We invite you to join **GTA Robotics** community group: <http://www.meetup.com/GTA-Robotics/>,
<https://twitter.com/gtarobotics>



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The source and APK of this app are available here: http://www.stemca.com/maker_festival/

A few extra steps, these needs to be done only once!

To test the app you need to install on your **Android** phone/tablet the following APKs (make sure **Unknown sources** is checked on your **Android** device in **Settings** → **Security**):

- OpenCV Manager 3.1.0

http://www.stemca.com/hackaday_stemca_inventor_apps/OpenCV_3.1.0_Manager_3.10_armeabi-v7a.apk

- STEMCA App Inventor Companion app:

http://www.stemca.com/hackaday_stemca_inventor_apps/sai.apk

Connect to the companion app using **Connect** → **AI Companion** menu in **STEMCA App Inventor** (in the browser).

Start **STEMCA App Inventor Companion** app and scan the **QR code** to connect the companion to the browser.

The app you are developing will show up on your phone/tablet and every change you'll make in the browser (**Designer** or **Blocks** pages) will be reflected immediately on the phone/tablet.

If the connection drops, use **Connect** → **Reset Connection** to reset the connection and then restart the **STEMCA App Inventor Companion** app on your phone/tablet and connect again using the **QR code** procedure as described above.