

SAINTS ROBOTICS'

MEDIA



HANDBOOK

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TAKING PICTURES

A. Why Is Photography Important?

Even though much of robotics is directly related to building the robot, photography also plays an important role in Saints Robotics. Photos are necessary for team promotion, and thus many parts of the club need photos. For example, Public Relations need photos to promote Saints Robotics to potential sponsors, and the graphics team needs them for creating posters.

B. What Kind of Camera Should I Use?

Any digital camera will work for Saints Robotics Media. However, due to poor image quality, camera phones are not recommended. For most purposes, a point and shoot camera will be optimal because it is easier to take candid shots with a point and shoot than a digital SLR. During competitions and other large events, please bring the highest quality camera you have because these events will be the highlight of Saints Robotics.



Digital SLR



Point and Shoot

C. Recommended Camera Equipment

Depending on your camera's resolution, you need a suitable memory card. Below is a table that shows how many photos you can take with a given memory card.

Memory Cards	Photos					
	2 MP	3 MP	4 MP	5 MP	6MP	8 MP
512 MB	595	452	381	298	238	159
1 GB	1190	905	762	595	476	317
2 GB	2379	1808	1524	1190	952	635
4 GB	4758	3619	3046	2381	1905	1270
8 GB	9516	7238	6092	4762	3812	2540

MP=Megapixels; MB=Megabytes, GB = Gigabytes)
 1 Megabyte (MB) = 1,000,000 bytes; 1 Gigabyte (GB) = 1,000,000,000 bytes

*Approximate number of standard JPEG pictures. JPEG file sizes vary based upon camera model and default settings, as well as user-selected resolution and compression mode settings. Some host devices may not support all of the Flash storage capacities listed.

Chart courtesy of: <http://www.digitalphotographywebsite.com>

*** Photo Tip 1 ***

Download your pictures periodically (once every two weeks or so). You do not want to risk losing your pictures! Also, if your memory card is filling up, remember to delete the pictures off your camera.

*** Photo Tip 2 ***

Remember to charge your camera battery or bring a spare. Some cameras don't give a low battery warning before it's too late.



D. What to Take Pictures Of

You can take pictures of almost anything. However, if it is not suitable for the web, do not post it. Saints Robotics needs a combination of action shots and candid shots to show all aspects of robotics. Saints Robotics also needs photos of every division of the club, including Build, Programming, PR/FR, Graphics, Web, and Media.

E. Basic Photographic Techniques

Here are the most important concepts to remember when taking pictures:

1. Use the Rule of Thirds
2. Freeze the Action
3. Shoot at Eye Level
4. Move Around for Perspective
5. Tight Shots—Use Zoom or Get Closer
6. Have a Subject
7. Take Panoramic Shots When Appropriate
8. Use Macro Mode to Get Close
9. Bump Up the ISO
10. Set Your White Balance Manually
11. Use Spot Focus then Recompose
12. Stabilize Your Shot
13. Use Self-Timer
14. Use Flash if Appropriate
15. Take Lots of Pictures
16. Come to All Meetings
17. Sync Camera to Atomic Clock (<http://www.time.gov/>)

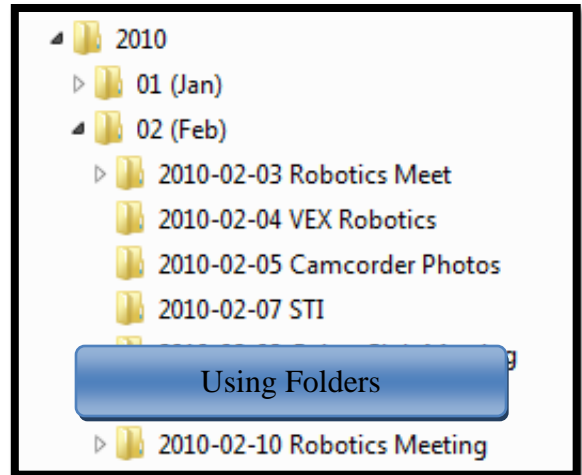
F. After Taking Pictures

So, you've taken a bunch of photos. Now, it's time to download them. You can usually plug your memory card into your computer or printer. You can also link your camera to your computer via USB cable. If not, you can always use the robotics computers at school to transfer your pictures.

It is important to organize your pictures on your computer. Make a separate folder for every month, and then a sub-folder for every date.

After sorting your pictures it is important to delete the pictures that you don't want. This includes blurry photos, out-of-focus pictures, and pictures that lack interest.

Finally, make a folder called "Photos to Upload." Copy your best photos into this folder. You can learn how to upload these photos to the web in Lesson 5. After you finish uploading these photos, rename the folder to "Uploaded Pictures" so you know you already posted it (see below).



EDITING PICTURES

A. What Can You Do With Photo Editing?

You can edit your photos to accomplish anything from simple color adjustments to removing unwanted objects and designing posters. You can shorten your depth of field to focus on your subject, remove unwanted noise when shooting in dark conditions, and sharpen photos for the web.

B. Which Software Should You Get?

The best software under \$100 is Photoshop Elements 8 and Corel Paint Shop Photo Pro X3. These programs allow you to do a variety of photo adjustments which will prove invaluable as you gain more experience. If you do not want to spend money, you can download GIMP from <http://www.gimp.org/>. This is a photo editor that has some basic capabilities. If you are serious about photo editing, Photoshop CS5 is one of the best commercial image editing programs. All students can purchase this program for \$200 with the Student-Teacher discount on the Adobe website.

ADOBE PHOTOSHOP
ELEMENTS 8Paint Shop Pro^{Ultimate}
PHOTO X3
The easiest way to get professional-looking photos—fast!ADOBE PHOTOSHOP CS5

C. Where to Learn How to Edit Pictures

You can always learn how to edit pictures at Saints Robotics meetings. If you have time to learn independently, go to your local library and check out a book related to your image editing program. These books can drastically improve your image editing skills and guide you every step of the way.

D. Photo File Formats

In the save window, there are so many file formats to choose from that it may be confusing at first. However, there are only a few you need to know.

Joint Photographic Grouping Format (.jpg/.jpeg)

This is the most common file format and the one you should use most often. It compresses the pixel information so that it takes less memory, but results in a slight loss of information. Photos from most cameras are saved in .jpg format, and you should save it in .jpg format after editing.

Portable Network Graphics Format (.png)

This format is non-lossy, which means that every pixel is saved with no loss of information when you save the picture. PNG supports transparency, and is best for logos where you want a transparent background and a high resolution. The file size is also larger, so this should only be used in cases where a higher resolution is necessary.

PhotoShop Data Format, Paint Shop Pro Image (.psd, .pspimage)

This format saves everything: your photo, layers, adjustment layers, transparency information, smart objects, and everything else in the picture. When editing, always save a .psd or .pspimage file in addition to the file you export. If you ever want to improve an old retouched photo without starting over, you can always open the .psd or .pspimage file and continue where you left off. However, the file size of these files is more massive than other formats, so you may want to consider how you plan to store them.

E. Resizing Photos

When it comes to posting photos online, your high resolution photos will be too large to post directly. It is necessary to resize your images so that it takes less time to load on the website and doesn't slow down the server. To do this, perform the following steps:

- 1) Open your image editing program
- 2) Click Batch Resize
- 3) Set the image width to 1000 px and the dpi (dots per inch) to 72.
- 4) Select the folder you want to upload to the web
- 5) Specify the destination for your pictures (make a new folder within the folder you are resizing and select this folder)
- 6) Select High Resolution JPG
- 7) Click OK

F. Panoramas

A panoramic photo is a wide-angle shot, usually comprised of a combination of pictures taken side by side and then digitally stitched together.



You can make panoramas using many conventional editing programs, such as Photoshop Elements and Paint Shop Pro.

A. What is the Goal of Taking Video?

Besides capturing memorable times, taking video is very important to team promotion, just as is still photography. In Saints Robotics, videos for team promotion are a really big deal because it enables us to introduce our sponsors to our team with an engaging visual as well as spread a positive public image through the web. Some of the videos revolve around a single event, such as the R&D workshop or the FIRST Robotics Competition. Other videos are designed to be informative, like the VEX promotional video. Most importantly, there are team promotional videos to demonstrate the highlights of Saints Robotics.

B. Video Recording Techniques

Here are the most important concepts to remember when taking video:

1. Know Your Camcorder
2. Use A Tripod
3. Plan Your Shots
4. Use A Storyboard
5. Interesting Angles—Get Up and Move Around
6. Pan and Zoom Slowly
7. Rule of Thirds
8. Close-Up Shots
9. Move Camera Around
10. Don't Decapitate Anyone
11. Make Sure Your Shots Are Not Shaky
12. Turn Off Digital Zoom

C. What Camcorder Should I Use?

The camcorders with internal hard drives are much more convenient than mini-DV camcorders because it allows for a much faster file transfer. Also, make sure your camera can record in widescreen mode, or 16:9 aspect ratio. Image Stabilizer is also highly recommended.



D. Video Camera Equipment

Make sure you always have a spare battery on hand at all times. You never know when you need it. If you can afford an external microphone, bring that too. External microphones will almost always be better than your internal camcorder microphone.

E. Capture the Moment

When taking video, it is important to capture the action. With videos, people only want to see the most exciting or dramatic clips. To capture these action shots, it is important to be aware of your surroundings and watch for things that would make an entertaining and memorable video. People working on and driving the robot make for a very interesting video. Remember to get close to the action, either by moving closer to the subject or by zooming in.

It is important to take lots of video. Sometimes it is not possible to go back and reshoot an event, so you must take all the video then and there. Also, it really helps if you make a storyboard containing all the shots you want to include. Taking more shots is usually better than taking less. With all of these clips, you must organize them all.

F. Organizing Your Videos

Organize your videos in folders with a folder for every date. Name each folder something like “2010-03-26 FRC Day 2.” This will ensure that your photos don’t get lost. Also, buying an external hard drive for your videos is extremely useful because videos take up a lot of space and may fill up your boot drive very quickly. 1 TB of memory is recommended.



G. Make a List

Chances are you will end up with a lot of video clips over the year. It can be really hard finding all of these videos. To fix this problem, it is recommended that you make a list of your videos showing image title, a short description, and a rating. Watch every video and jot a brief note about it in the chart. You can either do this electronically or on lined paper. This will save you hours when editing.

3/27/2010 FRC Day 3			
Used in Video?	Title	Description	Rating
<input checked="" type="checkbox"/>	032	Intro + Match 104 QF	5
<input checked="" type="checkbox"/>	033	Final Score to 104 QF	5
	034	Match 105 QF	3
<input checked="" type="checkbox"/>	035	Flag waving	4.5
	036	QF 106	2
	037	Match QF 107	3
<input checked="" type="checkbox"/>	038	Key Arena pan to team	4
	039	Zoom out from team to field to pits	3

EDITING VIDEO

A. Software

The best relatively inexpensive video software is Pinnacle Studio 14 and Sony Vegas Movie Studio HD Platinum 10. These programs allow you to add



transitions, generate text, animate objects, and use many tracks to edit. At Fry's Electronics,



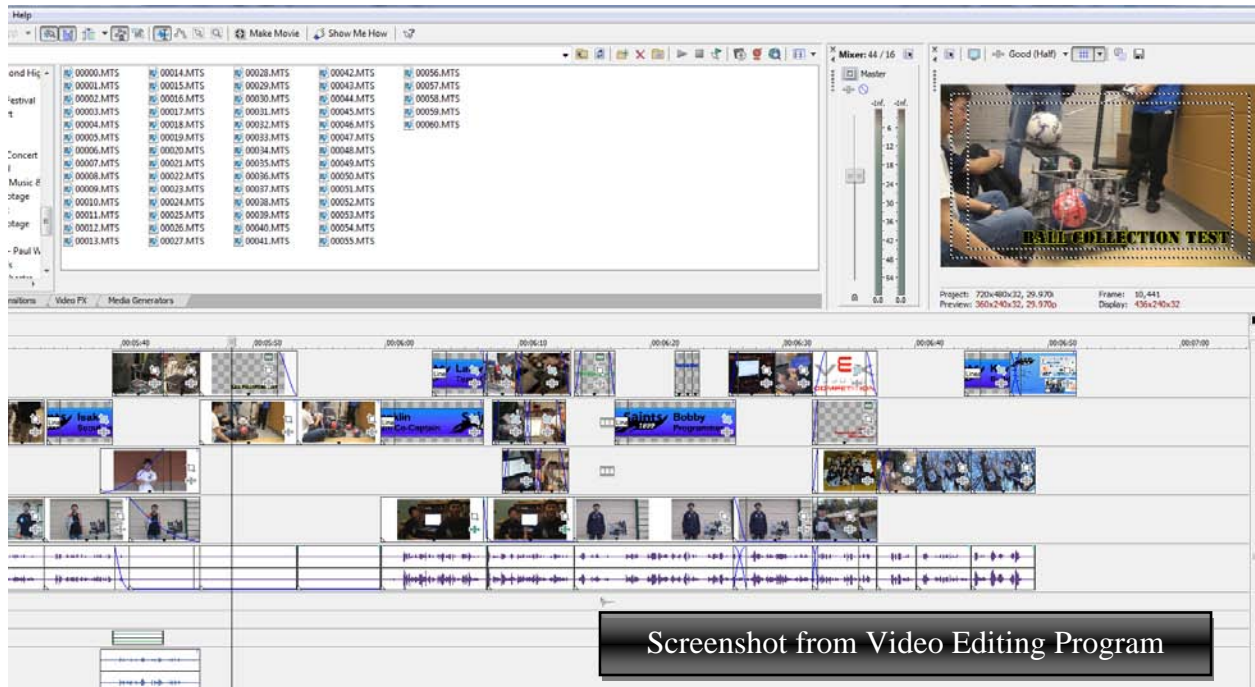
you can get a really good deal if you are eligible for their rebates. There are other video editing programs on the internet that you can use as well, such as trakAxPC.

B. Using Your Footage

You've taken many great videos throughout the year. Now what? Put the clips on the timeline and burn a disc. But wait it's not that simple. Video editing is about creatively putting together clips to tell your audience something. In robotics videos, you usually want to promote Saints Robotics and make your video fun to watch. This lesson will show you the basics necessary to make a great video.

C. Content

Pay attention to what you are creating. Are you making a promo video, a photo slideshow, a commercial, or documentary? This will determine the layout and tone of the video. Most videos start with the title of the video. The music begins and the audience is eager to watch. Then, the video starts. The clips should be structured in such a way as to tell a story. One way to organize this is chronologically. You can also group clips by subject. Organize the photos on the timeline by whatever makes the most sense.



D. Video Editing Tips

1. Combine Many Short Clips (3-5 seconds)
2. Clip, Snip, Trim
3. Don't Use Irrelevant Shots
4. Choose Appropriate, yet Exciting Music
5. Do Not Use Distracting Transitions
6. Make Titles Professional Looking
7. Balance Background Music and Dialogue Volume
8. Use Pictures and Video
9. Animate Still Pictures
10. Use Chroma Key
11. Time Your Cuts With the Music

Lesson 5:

UPLOADING TO WEB

A. Posting Media Online

This is where you get to share your amazing photos and videos. After you post it online, your pictures and videos will be viewed by people from across the globe. Our sponsors can also check up on Saints Robotics via the website, so any videos posted must first be approved by the media crew. You can post any pictures that are appropriate and relevant to the club.



B. Remember to Resize Photos

Your photos are very high-resolution—good for print but too good for web. You must first resize your photos before uploading them to the website. Learn about resizing in Lesson 2 Part E.

C. Uploading Photos to the Web

It's time to showcase all of your great pictures. First, open up the website manager and log in. Under Gallery, click on the button that says, "Add Gallery / Images." Create a new gallery under the "Add New Gallery" tab. Then select the "Upload Images" tab. Make sure

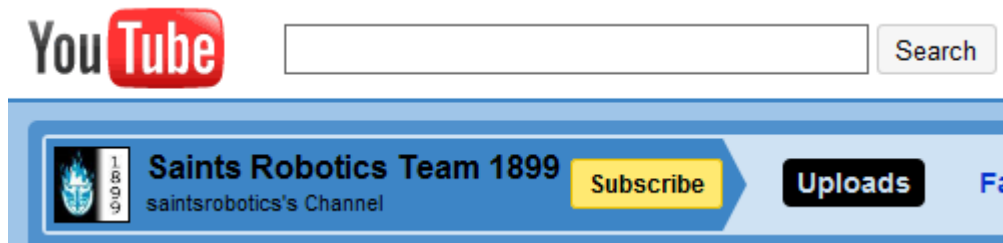


you enable flash upload. Click Browse, and find the folder you want to upload (the resized one). Next, select the new picture gallery that you just made. Finally, click Upload Images and wait while it uploads.

D. Renaming Pictures

On the website, all of the photos have a name like IMG_1899, which is not very useful to web surfers. Therefore, it is necessary to give a short descriptive name to every picture. However, to protect everyone's privacy, do not put someone's first and last name in the photo. To rename a photo, find the photo gallery under "Manage Gallery" and enter titles for all of the pictures. Remember to click Save Changes after you finish.

E. Getting Videos on YouTube



If you have a video to upload to YouTube, give it to your media captain to upload to the saintsrobotics account, located at <http://www.youtube.com/user/saintsrobotics>. The website team will then create a link on the website to the video.

LESSON 6:

COORDINATING WITH TEAM

A. Plan in Advance

If you want to schedule something such as a group photo or interview, notify the team at least one week in advance. This will give members a heads up so they know to come and prepare (and wear their t-shirts).



B. Planning Your Shots

When going to large events, it is important to capture all aspects of the event: robot in motion, drivers, pits, audience, and scoreboard. Make sure you know your role when taking photos and/or videos.

C. Transferring Photos

The easiest way to transfer photos is through USB stick file transfer. However, ensure that you have anti-virus software for your computer as the school computers may contain viruses. Put all of your good photos (not resized) into a folder. Name your folder “2010-02-18 TO Robotics Meeting” with your first and last initial between the date and the event name.



D. Come to Meetings

Make sure to attend meeting on Wednesday and Friday. You can learn as much as you want at meetings, and the club needs pictures of the robot at every stage.

E. Conclusion

Congratulations! You have just learned all the essentials to take and edit photos and videos and upload them to the web. You know all you need to be an excellent photographer/cameraperson. But remember, experience is the best way to improve.

Saints
1899