



THE NATIONAL WWII MUSEUM
ROBOTICS
CHALLENGE

Fighting for the Right to Fight

African American Experience in World War II



“Photograph of several Tuskegee airmen at Ramitelli, Italy, March 1945” (Library of Congress)

African Americans have fought in nearly every U.S. war. They earned awards as individuals and as military units. During World War II, over 1.2 million African Americans served in all branches of the US military and in every theater of the war. They also fought political and social battles at home. They petitioned for the right to work in defense factories and other wartime industries. World War II had a special meaning for African Americans; it was a fight for democracy overseas and for civil rights at home. From Tuskegee Airmen fighting segregation in Europe to Black Rosie the Riveters taking jobs left by men at war, African Americans paved the way for social change in America.

This year’s challenge is inspired by the [Fighting for the Right to Fight African American Experience in World War II](#) special exhibit that is on display in The National WWII Museum's Senator John Alario, Jr. Special Exhibition Hall in the Hall of Democracy building through July 27, 2025. More information about the special exhibit can be found on the Museum’s website.

Robot Game Rules

Headquarters



Your robot can only launch from the Headquarters area, but it can return anywhere in the Headquarters and base area. The robot, any attachments, and any mission manipulatives must fit inside Headquarters before launching. If a mission states that something must be returned to Headquarters, it must be brought to Headquarters before exiting the mat.

Touch Penalties

You can only touch your robot in Headquarters and in the free space to the left of your mat. If you touch your robot while it is on any other section of the Robot Game mat, your team will receive a one-time touch penalty of ten points.

Benefit of the Doubt

Teams will receive the benefit of the doubt when it comes to mission objective points if there is any doubt to scoring regarding the Robot Game.

Robot Game Missions

Your robot will complete missions to earn points during the Robot Game match. The goal is to earn as many points as possible. Each Robot Game match will last two minutes and thirty seconds. Missions do not need to be completed in any particular order. They are numbered here for ease of understanding.

1. Draft Letter
2. Building Victory
3. SS Sea Cloud
4. Red Ball Express
5. Protest Banner
6. 688th Battalion
7. Black Rosies
8. Blood Plasma
9. Tuskegee Airmen

Draft Letter

In response to the war in Europe, President Roosevelt signed the Selective Training and Service Act of 1940, creating the first peacetime draft in US history. This Act banned discrimination, but the military stayed segregated. More than 2.5 million African American men registered for the draft during WWII. About half of the men registered were drafted during the course of WWII. Many African American women also volunteered for service. Bases and training facilities were often in the South, where segregation was particularly entrenched in the communities. Traveling in the South was very difficult for African American soldiers. During their enlistment they endured separate blood banks, hospitals, barracks, and recreation areas separate from white soldiers. Despite all this, African American service was vital to the success of the Allies in winning the war.

For this mission, your robot will move the flap of the Draft Letter envelope to make the Draft Letter visible. The top of the envelope will be held down by sticky tack. If your robot touches the envelope during the match your team will receive 5 points. If the draft letter is visible to the referee during the match your team will receive 15 points.



Building Victory

African American engineers and construction battalions built vital infrastructure across the world during WWII. Over 25,000 men in 48 segregated Engineer Aviation Battalions built airfields in North Africa, Sicily, and Italy. Others helped maintain airfields for flying supplies over the Himalayan Mountains into China. In the Pacific theater, the 857th Engineer Aviation Battalion built vital bases and airstrips in Australia, New Guinea, and the Philippines. This work helped with the success of the Allies island-hopping campaign as they made their way towards Japan.

For this mission, your robot will stack the wooden blocks inside the black outlined rectangle on the mat. If you place 1 block completely in the black rectangle outline you will receive 20 points. If you stack a second block on top of the first and this second block is completely supported by the first block you will receive 20 additional points. If your first block is not completely in the rectangle you will receive 10 points.



SS Sea Cloud

At the start of World War II, the Navy confined African Americans, with rare exceptions, to roles as stewards, messmen, or cooks. As the conflict wore on, Navy policy changes created more job opportunities for African American sailors. One opportunity was to serve on the SS Sea Cloud. The Sea Cloud had the Navy's first fully racially integrated crew. Fifty Black sailors, including two officers, worked to make the SS Sea Cloud a top weather patrol ship. During operations the ship passed its fleet inspections with no issues.

For this mission, your robot will move the boat from its starting position to the water. If your boat is touching the water you will receive 10 points. If your boat is completely in the water you will receive 20 points.



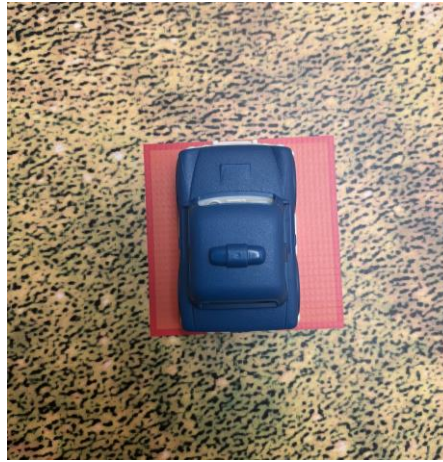
Red Ball Express

The Red Ball Express was a daring military convoy operation in France after the D-Day landings. With railroads and infrastructure destroyed, over 6,000 trucks were used to transport supplies from August to November 1944. The trucks carried rations, gasoline, and ammunition to soldiers on the front lines. These resupplies allowed them to continue fighting. Over two-thirds of the Red Ball Express drivers were African American. They braved dangers to deliver over 412,000 tons of supplies. Their work was key to keeping Allied momentum in the push into Nazi-occupied Europe.

For this mission, your robot will bring a toy car from Headquarters to the red square on the mat. Your team will receive points based on where the car is located at the end of the match. If the car is completely inside of the red square, your team will be awarded 25 points. If the car is partially inside of the red square, your team will receive 10 points.

The car must be upright at the end of the match to receive points. If all four of the car's wheels are not touching the mat at the end of the match, no points will be awarded. To be considered completely inside of the square, all four of the car's wheels must be touching the inside of the red square. To be considered partially inside of the square, at least one of the wheels must be touching the inside of the red square.

There are six different designs for the toy cars that will be sent to participating teams. The shapes of the cars are slightly different, but they are all the same size. Robot Game referees will randomly select the car design used in each match. Please be mindful of this variability when preparing for this mission.



Protest Banner – Double “V” Campaign

In January 1942, 26-year-old cafeteria worker James G. Thompson of Wichita, Kansas, wrote to the Pittsburgh Courier. He called for a "Double Victory" campaign to fight fascism abroad and racism at home. Thompson wrote, “Should I sacrifice my life to live half American?... Would it be demanding too much to demand full citizenship rights in exchange for the sacrificing of my life?” The Double Victory campaign became a national effort. It demanded more opportunities for African Americans in the military and in civilian life.

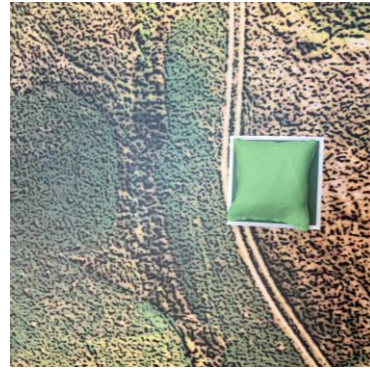
For this mission, your robot will unfold the handkerchief to cover the yellow rectangle. If the handkerchief is partially covering the yellow section, you will receive 15 points. If the handkerchief is completely unfolded and covers most of the yellow square you will receive 30 points. Points will not be awarded if the handkerchief is detached from the mat.



Mail Call with the 6888th Battalion

The 6888th (Six Triple Eight) Central Postal Directory Battalion was the only deployed female African American unit. The soldiers job was to clear a backlog of undelivered mail, ensuring millions of letters reached American soldiers in Europe and their loved ones back in the United States. In February 1945, over seven million US personnel were in Europe, many had not received mail in months. With the motto "No Mail, Low Morale," the unit's 855 Women's Army Corps worked 24 hours a day in multiple shifts to process over 17 million items of mail in three months.

For this mission, your robot will move the two bean bags from their starting locations on the mat to the squares that match their color. For example, the green bean bag should be moved to the corresponding green square. Each bean bag must be completely inside the correct square at the end of the match to earn points. 10 points will be awarded for each bean bag that is delivered correctly, so your team can earn 10 or 20 points with this mission.



Black Rosies

During World War II, millions American women on the Home Front answered the call to join the wartime workforce, many for the first time, as job opportunities in the defense industry that had traditionally belonged only to men opened to women. By taking on new roles, these women—known as Rosie the Riveters—helped produce critical supplies, support the Allied fighting forces. Today, Rosie the Riveter is one of the most popular and enduring symbols of the WWII era, representing the women workers whose contributions paved the way for future generations.

By 1944, African American Rosie the Riveters made up over 8% of the skilled workforce. They worked in almost all areas of war production. These women accounted for about 600,000 of the jobs held by African Americans during World War II. One Black Rosie said, “This is our war [but] we cannot win it in the kitchen, we must win it on the assembly line.” Some Rosies, like Ruby Dee and Maya Angelou, became celebrities after the war. Others, like Rosa Parks, became iconic civil rights activists. But most blended back into American Society. In December of 2020, the Rosie the Riveter Congressional Gold Medal Act was signed into law in recognition of all of these women’s dedicated service during the war. The Congressional Gold Medal is the highest civilian honor bestowed by the US Congress.

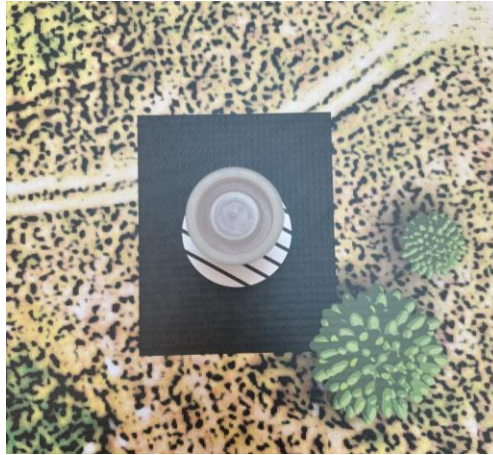
For this mission, your robot will place wooden rings around the dowel attached to the mat. Points will be awarded depending on the number of rings placed on the wooden dowel at the end of the match. If there are three rings on the dowel at the end of the match, your team will receive 40 points. If there are two rings on the dowel at the end of the match, your team will receive 25 points. If one ring is on the dowel at the end of the match, your team will receive 15 points. No points will be awarded if the dowel is detached from the mat during the match.



Blood Plasma

Beyond serving in the military and working in factories, African Americans contributed to victory in many other ways. Dr. Charles R. Drew made key advances as a surgeon and researcher, and as an administrator. He ran Blood for Britain, which served a key role providing medical resources during the Blitz. He was then the director of the National Blood Bank for the American Red Cross. He resigned from the Red Cross in 1942, because they still segregated blood from Black Americans. After resigning, he returned to Howard University to teach in the University’s medical school.

For this mission, your robot will take the blood plasma tube and return it to headquarters. If the tube is returned to headquarters by the end of the match your team will receive 25 points.



Tuskegee Airmen

Before the Tuskegee Airmen, no African American had been a U.S. military pilot. At the insistence of First Lady Eleanor Roosevelt, the military created the first African American fighter squadron in 1941. The 99th Fighter Squadron, later the 332nd Fighter Group, symbolized Black participation in WWII. The Tuskegee Airmen flew hundreds of patrol and attack missions, flying P-40 and P-39 airplanes. Later in the war they were reassigned to the 15th Air Force to escort B-17 and B-24 heavy bombers, using P-47 and P-51 airplanes. As escorts, they were responsible for protecting larger bombers from German fighter planes. The Tuskegee Airmen flew more than 15,000 sorties between May 1943 and June 1945. Bomber crews often requested to be escorted by these “Red Tails,” a nicknamed acquired from the painted tails of Tuskegee fighter planes, which were a distinctive deep red. Sixty-six Tuskegee Airmen died in combat. They had one of the lowest loss records of any escort fighter group.

For this mission, your robot will retrieve the airplane from its starting location on the mat and return to Headquarters. If the plane is outside of the square on the mat at the end of the game your team will receive 10 points. If the plane is returned and completely in Headquarters by the end of the match your team will receive 25 points.



Engineering Project: Fighting for the Right to Fight

African American soldiers played a pivotal role in the Allies' victory during World War II. However, they still were treated as second-class citizens by the nation they served.

Your Team's Project

Your team will design a three-fold project board using words and photographs to tell the story of an African American soldier and their experiences during World War II. The project board should answer the following questions about your subject:

- Who is the subject of your project?
- What did they do to support the war effort during World War II?
- Where did your subject serve? What branch of the military were they a part of?
- What lasting impact did your subject's achievements have? *

*You might not be able to find concrete information about the impact your subject has had. Use the information you find about their story to make an argument about why their achievements were important. For example, your subject may have shared their experiences through writing or interviews. How did their story impact our knowledge of history? What can we learn from their point of view? It is most important to include **why** you think their achievements had a lasting impact.

Designing Your Project Board

For competing teams, it is recommended that you use a threefold project board that can stand on its own. It does not need to be a specific size but should not take up more than a 3 ft x 3 ft footprint.

Your project board should answer the questions above with photos and text. Every photo should have a caption that explains its contents. There are examples of photo captions throughout the WWII Museum's website. The sections of the project board do not need to be organized in a specific way, but a recommended structure is given below. Competing teams will be judged according to the overall organization of the project board and its content.

Recommended structure:

- Center Panel: Overview of subject, including general background information
- Left Panel: The subject's contribution to the war effort
- Right Panel: The lasting impacts of the subject's achievements; the subject's legacy

Competing Teams

Competing Teams should bring their project board to the National WWII Museum on the day of the competition. Museum staff and volunteers will help each team bring their project board to the correct place for judging.

Sources & Citations

Your poster should have content from at least three sources. Somewhere on the website, include a list of sources for your team's research. Any source that you get information, images, or any other content from should be cited. We recommend that sources are cited in MLA format.

Robotics Challenge Competition Rules

Teams must be registered online with The National WWII Museum to compete in the Robotics Challenge. Registered teams will receive the season's game mat and mission models by mail.

Teams must participate in both the Robot Game and the Engineering Project.

Teams will consist of a minimum of 2 and a maximum of 10 team members.

Team members must be in the 4th through 8th grade at the time of competition, unless provided with written approval from The National WWII Museum.

All work presented at the Robotics Challenge Competition must be by the team members; adults cannot take part in building or programming of the robot, or with the design and construction of the engineering project. Adults are not permitted to interact with a team's robot. This includes competitions.

Only LEGO Mindstorms (any generation) or LEGO SPIKE Prime robots can be used for the competition.

Teams, coaches, volunteers, staff and spectators are expected to exhibit good sportsmanship throughout the competition season.

Consequences

Teams and individuals that fail to follow the Robotics Competition Rules may be ineligible for awards and/or advancement at a Robotics Competition.

Criteria for Judging and Important Dates

- Your project will be judged for its originality and effectiveness in telling the story of an African American soldier and their experiences during World War II.
- Historic accuracy, grammar, spelling, punctuation, and overall visual appeal are important components of the judges' decisions.
- It does not need to be a specific size but should not take up more than a 3 ft x 3 ft footprint.
- Judging will take place at the National World War II Museum during the Robotics Challenge on **Saturday, May 10th**.
- Bring your poster to the Challenge for judging.
- Be prepared to answer questions about your project, including but not limited to:
 - ☐ Who is the subject of your project?
 - ☐ What did they do to support the war effort during World War II?
 - ☐ Where did your subject serve? What branch of the military were they a part of?
 - ☐ What lasting impact did your subject's achievements have?