Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

e-YRC 2017 Competition

In the e-Yantra robotics Competition 2017 all the final year Project batches of ECE department Participated and only one batch got selected in the prelims. The selected batch then cleared second and third task assigned under the theme called "**Feeder Weeder robot".** In the finals they bagged second prize in the sixth edition of National-level e-Yantra Robotics Competition **(eYRC-2017) held at IIT Bombay from March 22 to 24.**

In this project Feeder-Weeder, considered a scenario where all of the work done on farms is automated by a group of autonomous robots working together in sync with each other. In this Project, we have used concepts such as microcontroller programming, communication, path planning, sensor interfacing. In this project by considering an agricultural field with many crops growing in it. Some of these crops need to be fed N-fertilizer and others need to be fed P-fertilizer. In addition to this, there are some Weeds growing in the field which need to uprooted and disposed outside the field. In order to complete these tasks two Fertilizer Robots and a Weeding Robot are deployed in the field. Each of the fertilizing robots carries one particular type of fertilizer. The task of the Fertilizer robots is to traverse the field and identify crops which are required to be fertilized and fertilize the crops which require the same fertilizer as the one it is carrying. The task of the Weeding robot is to identify and remove weeds from the field. To make this system work more efficiently, the robots communicate between each other to share information and coordinate with each other.

The Firebird V robot is used for weeding and two Spark V robots to feed two fertilizers to two different plants. The model of a agricultural field is built on a flex of 8*8 feet size .The track has 6*6 blocks, borders for which are black lines and the nodes have a thick black portion.

Each Robot have inbuilt white line sensors which keep the robot on track while it traverse the arena. The plants and weeds are kept at the center of the block. To differentiate, weeds and plant are designed with different colors. Weeds are green and two plants are blue and red. The robots identify the plants with the color sensor that is interfaced in them. The robots use sharp sensors to avoid collision between them. They communicate with each other using RF Zigbee module.

The algorithm is designed in such a way that all the robots begin their operation at the same time. Robots scan the arena for plants and weeds and when they identify it, they first indicate the color of the plant by glowing RGB LED of the detected color and then they perform their task that they are designed for. When feeder robots identify their respective plants, they drop the feed to the root cavity through the feeding pipe. And when the weeding robot identifies weeds, it uses the robotic arm built on it to pluck the plant and deposits it in the weed collector box. When all the operation is done the feeder robots go to their home position which is given in the track and the weeder goes to the deposition zone and drops the weed collector box and then goes to its home location.

The concept used in this project is adopted from Swarm robotics. Swarm robotics is an approach to the coordination of multi-robot systems which consist of large numbers of mostly simple physical robots. It is supposed that a desired collective behavior emerges from the interactions between the robots and interactions of robots with the environment. Swarm robotics is an emerging approach to coordinate a large number of robots. These robots, which are usually simple and low-cost, may perform a wide variety of missions, serving either civilian or military applications. Since autonomy, modularity, collaboration and interactivity are characteristics of swarm robotics systems, the multi-agent paradigm became a natural choice to address their issues. Because of its inherent complexity and reuse possibilities, there are many advantages in using system-of-systems architectures for designing swarm robotics systems.

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#	Name	USN	Title	Guide
1	Arun Kumar	4AL14EC011	**Feeder Weeder Robot**	Mr. Santhosh S.
2	Chethak	4AL14EC023		
3	Deepika	4AL14EC027		
4	Rohan Sonal Dsouza	4AL13EC067		

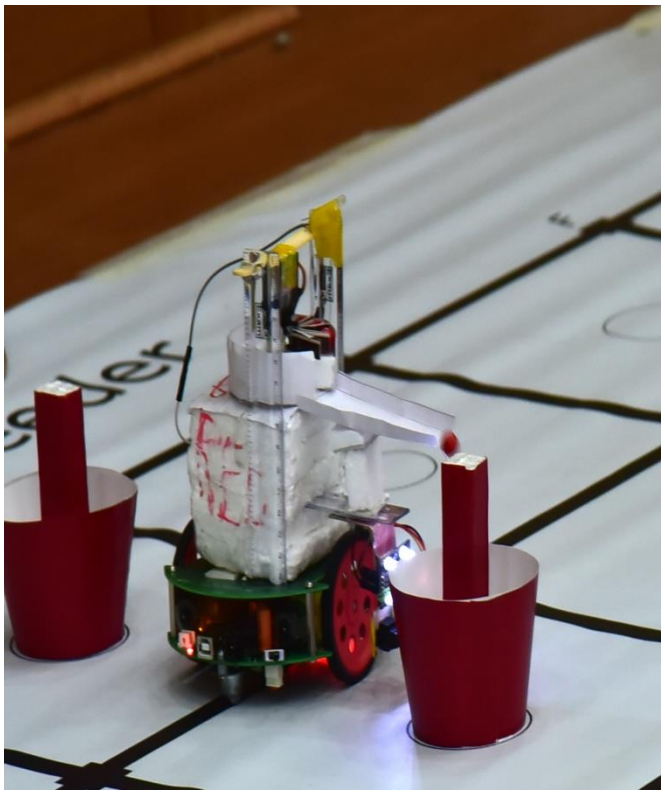


Fig : Red feeder Robot feeding to the red plant.

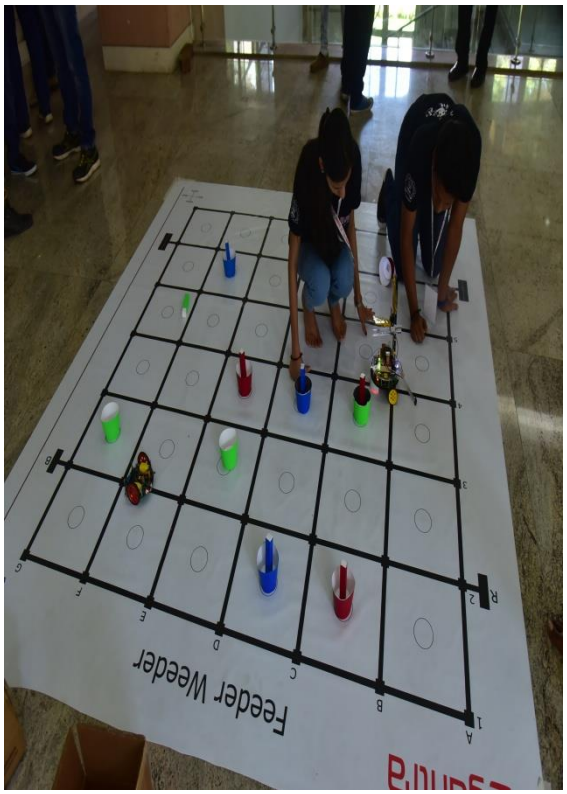
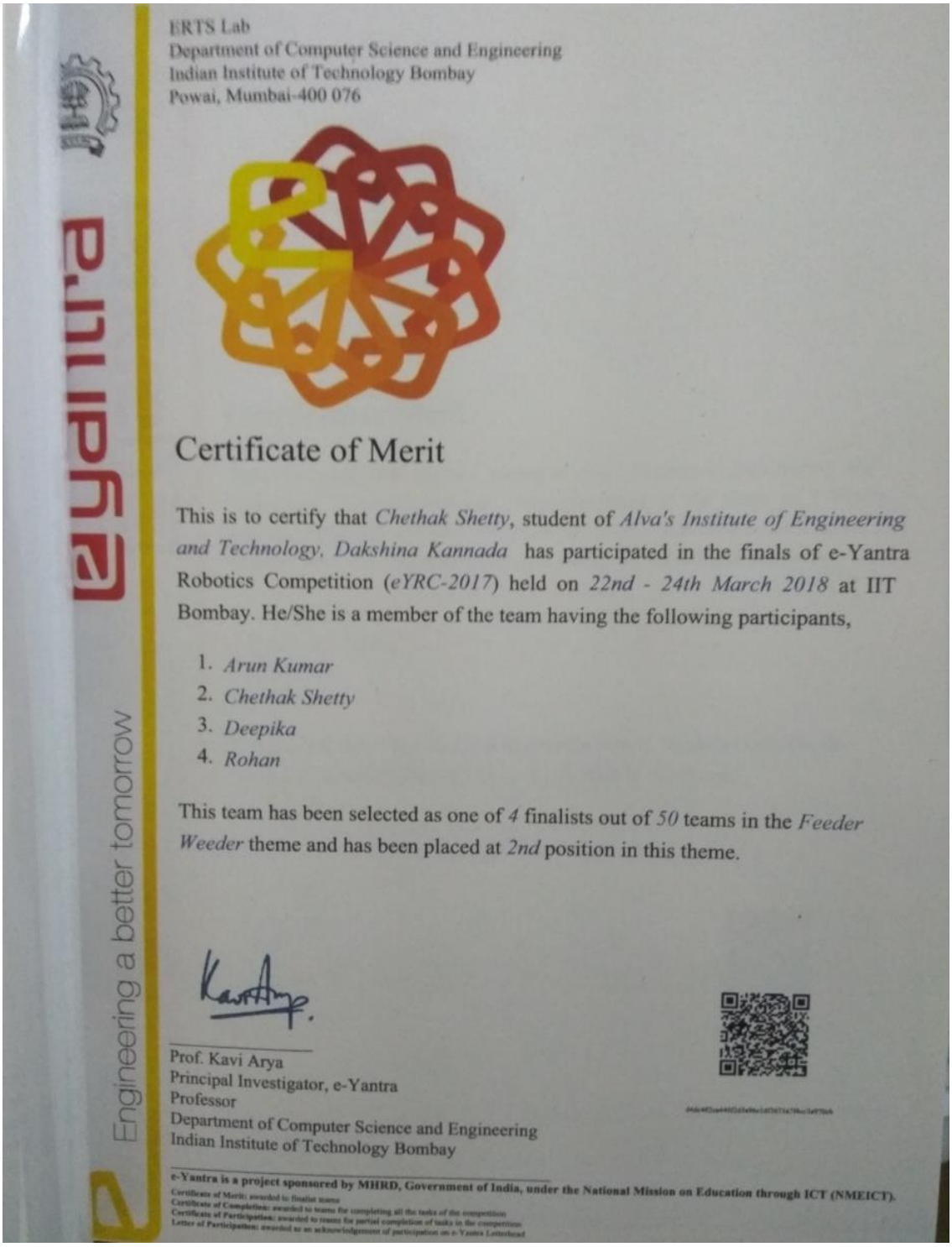


Fig : Weeder Robot Removing weeds.

Fig: Feeder Weeder Robot Arena

Fig: Fig: e-YRC 2017 Team



ERTS Lab
Department of Computer Science and Engineering
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Powai, Mumbai-400 076

e-Yantra
Engineering a better tomorrow

Certificate of Merit

This is to certify that *Chethak Shetty*, student of *Alva's Institute of Engineering and Technology, Dakshina Kannada* has participated in the finals of e-Yantra Robotics Competition (*eYRC-2017*) held on *22nd - 24th March 2018* at IIT Bombay. He/She is a member of the team having the following participants,

1. *Arun Kumar*
2. *Chethak Shetty*
3. *Deepika*
4. *Rohan*

This team has been selected as one of *4* finalists out of *50* teams in the *Feeder Weeder* theme and has been placed at *2nd* position in this theme.

Prof. Kavi Arya
Principal Investigator, e-Yantra
Professor
Department of Computer Science and Engineering
Indian Institute of Technology Bombay

e-Yantra is a project sponsored by MHRD, Government of India, under the National Mission on Education through ICT (NMEICT).

Certificate of Merit: awarded to finalist teams
Certificate of Completion: awarded to teams for completing all the tasks of the competition
Certificate of Participation: awarded to teams for partial completion of tasks in the competition
Letter of Participation: awarded as an acknowledgement of participation on e-Yantra Letterhead

Fig: Certificate of Merit Received

ರೋಬೊಟಿಕ್ಸ್ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಆಳ್ವಾಸ್‌ಗೆ ಪ್ರಶಸ್ತಿ

ಇ-ಯಂತ್ರ ರೋಬೊಟಿಕ್ಸ್ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಬಹುಮಾನ ಪಡೆದ ವಿದ್ಯಾರ್ಥಿಗಳು.

ವಿಶ್ವವಾಣಿ ಸುದ್ದಿಮನೆ ಮೂಡುಬಿದಿರೆ

ಐಐಟಿ ಬಾಂಬೆಯಲ್ಲಿ ನಡೆದ ರಾಷ್ಟ್ರಮಟ್ಟದ ಆರನೇ ಆವೃತ್ತಿಯ 'ಇ-ಯಂತ್ರ ರೋಬೊಟಿಕ್' ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಆಳ್ವಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ(ಎಐಇಟಿ) ನಾಲ್ವರು ವಿದ್ಯಾರ್ಥಿಗಳ ತಂಡ ದ್ವಿತೀಯ ಸ್ಥಾನ ಪಡೆದುಕೊಂಡಿದ್ದಾರೆ.

ಆರು ತಿಂಗಳ ಅವಧಿಯ ಈ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ದೇಶದ ಸುಮಾರು 508 ಕಾಲೇಜಿನ 23728 ವಿದ್ಯಾರ್ಥಿಗಳು ಭಾಗವಹಿಸಿದ್ದರು. ಈ ಪೈಕಿ ಅಗ್ರ 35 ತಂಡಗಳಲ್ಲಿ ಸ್ಥಾನ ಪಡೆಯುವಲ್ಲಿ ಎಐಇಟಿ ಯಶಸ್ವಿಯಾಯಿತು. ಈ ಸ್ಪರ್ಧೆಯು ಮೂರು ಹಂತದಲ್ಲಿ ನಡೆದಿದ್ದು, ಮೊದಲ ಹಂತದಲ್ಲಿ ಆನ್‌ಲೈನ್ ಪರೀಕ್ಷೆ, ನಂತರ ರೋಬೋಟ್‌ನಲ್ಲಿ ತಂತ್ರಜ್ಞಾನದ ಆಳವಡಿಕೆ ಹಾಗೂ ಕೊನೆಯ ಹಂತದಲ್ಲಿ ಯಂತ್ರದ ಯಶಸ್ವಿ ಕಾರ್ಯಾಚರಣೆಯ ದೃಢತೆಯೊಂದಿಗೆ ಸ್ಪರ್ಧೆ ಕೊನೆಗೊಂಡಿತು.

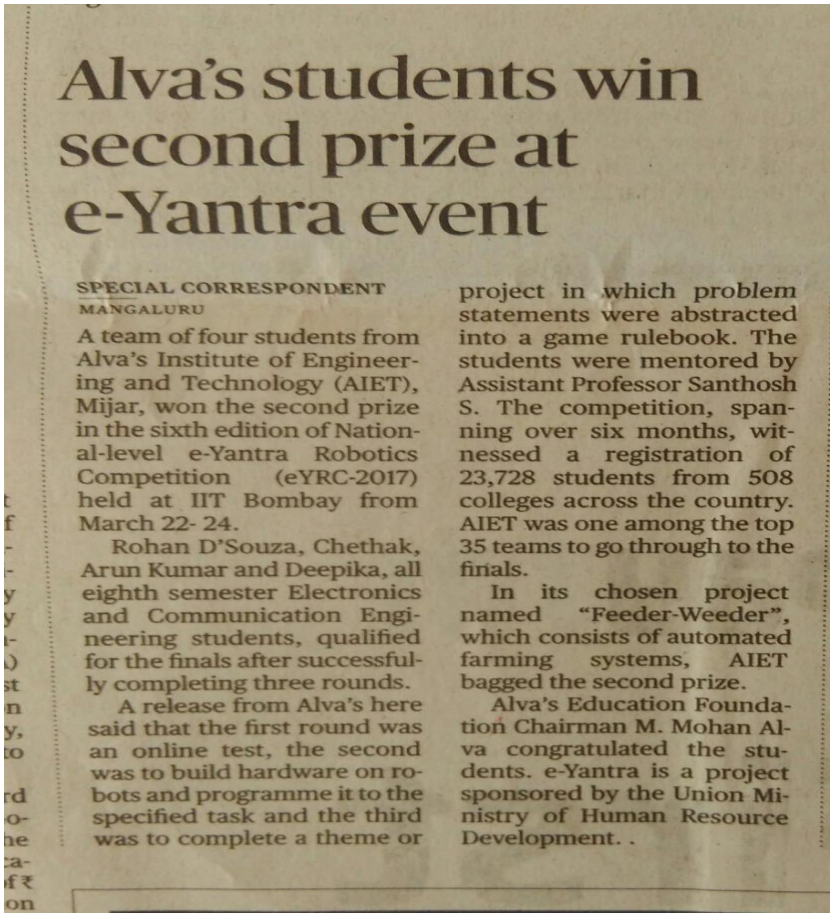
ಎಐಇಟಿಯ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಆ್ಯಂಡ್ ಕಮ್ಯೂನಿಕೇಷನ್ ಎಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದ 8ನೇ ಸೆಮಿಸ್ಟರ್ ವಿದ್ಯಾರ್ಥಿಗಳಾದ ರೋಹನ್ ಡಿಸೋಜಾ, ಚೇತಕ್, ಅರುಣ್ ಕುಮಾರ್ ಹಾಗೂ ದೀಪಿಕಾರ ತಂಡ ನಿರ್ಮಿಸಿದ 'ಫೀಡರ್-ವೀಡರ್' ಎಂಬ ಯಂತ್ರ ಎರಡನೇ ಸ್ಥಾನ ಗಳಿಸಿತು. ಎಐಇಟಿ ವಿದ್ಯಾರ್ಥಿಗಳು ತಯಾರಿಸಿದ 'ಫೀಡರ್-ವೀಡರ್' ಸ್ವಯಂಚಾಲಿತ ವ್ಯವಸಾಯ ವ್ಯವಸ್ಥೆಯಾಗಿದ್ದು, ಕೃಷಿಯ ಚಟುವಟಿಕೆ ಸುಲಭಗೊಳಿಸಲಿದೆ.

ಇ-ಯಂತ್ರ ಕೇಂದ್ರ ಮಾನವ ಸಂಪನ್ಮೂಲ ಅಭಿವೃದ್ಧಿ ಮಂತ್ರಾಲಯ ಪ್ರಾಯೋಜಿತ ಕಾರ್ಯಕ್ರಮ ರಾಷ್ಟ್ರೀಯ ಸಾಕ್ಷರತಾ ಮಿಷನ್ ನಲ್ಲಿ ಐಐಟಿ(ಎಸ್. ಎಮ್.ಇ.ಐ.ಟಿ) ಮೂಲಕ ವಿಜ್ಞಾನ ಕಾಲೇಜುಗಳಲ್ಲಿ ರೋಬೊಟಿಕ್ಸ್ ಶಿಕ್ಷಣ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಪಸರಿಸುವ ನಿಟ್ಟಿನಲ್ಲಿ ದೇಶಾದ್ಯಂತ ಈ ಸ್ಪರ್ಧೆ ನಡೆಸಲಾಗುತ್ತದೆ.

ಆಳ್ವಾಸ್ ಶಿಕ್ಷಣ ಪ್ರತಿಷ್ಠಾನದ ಅಧ್ಯಕ್ಷ ಡಾ. ಎಂ. ಮೋಹನ್ ಆಳ್ವ ಮಾತನಾಡಿ, ವಿದ್ಯಾರ್ಥಿಗಳು ಪಠ್ಯದಲ್ಲಿ ಕಲಿತ ವಿಷಯ ಪ್ರಾಯೋಗಿಕವಾಗಿ ದೇಶದ ತಂತ್ರಜ್ಞಾನದ ಅಭಿವೃದ್ಧಿಯ ಜತೆಗೆ ಸಮಾಜಮುಖಿಯಾಗಿ ಬಳಸಿದಾಗ ಪರಿಸರದಲ್ಲಿ ಬದಲಾವಣೆ ಸಾಧ್ಯ ಎಂದರು.

Classifieds

Fig: Vishavani News Paper clip



Alva's students win second prize at e-Yantra event

SPECIAL CORRESPONDENT
MANGALURU

A team of four students from Alva's Institute of Engineering and Technology (AIET), Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay from March 22- 24.

Rohan D'Souza, Chethak, Arun Kumar and Deepika, all eighth semester Electronics and Communication Engineering students, qualified for the finals after successfully completing three rounds.

A release from Alva's here said that the first round was an online test, the second was to build hardware on robots and programme it to the specified task and the third was to complete a theme or project in which problem statements were abstracted into a game rulebook. The students were mentored by Assistant Professor Santhosh S. The competition, spanning over six months, witnessed a registration of 23,728 students from 508 colleges across the country. AIET was one among the top 35 teams to go through to the finals.

In its chosen project named "Feeder-Weeder", which consists of automated farming systems, AIET bagged the second prize.

Alva's Education Foundation Chairman M. Mohan Alva congratulated the students. e-Yantra is a project sponsored by the Union Ministry of Human Resource Development. .

Fig: Deccan Herald Paper clip

that 287 cases were reported un-

Students from Alva's Institute of Engineering and Technology, Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay recently. DH PHOTO

Alva's engineering students win prize in eYRC-2017

MANGALURU, DHNS: A team of four students from Alva's Institute of Engineering and Technology (AIET), Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay from March 22 to 24.

The students, Rohan D'Souza, Chethak, Arun Kumar and Deepika from the eighth semester Electronics and Communication Engineering, qualified for the finals after successfully completing three rounds.

The competition, spanning over six months, attracted a registration of 23,728 students from 508 colleges across the country. AIET was one among the top 35 teams to go through to the finals. In its chosen project named 'Feeder-Weeder' that comprised automated farming systems, AIET bagged the second prize.

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT) to spread effective Embedded Systems and Robotics education at Engineering/Science/Polytechnic colleges across the country. eYRC is a unique annual competition for undergraduate students of such colleges.

The students were mentored by Assistant Professor Santhosh S.

BPCL wins Bridge tourney