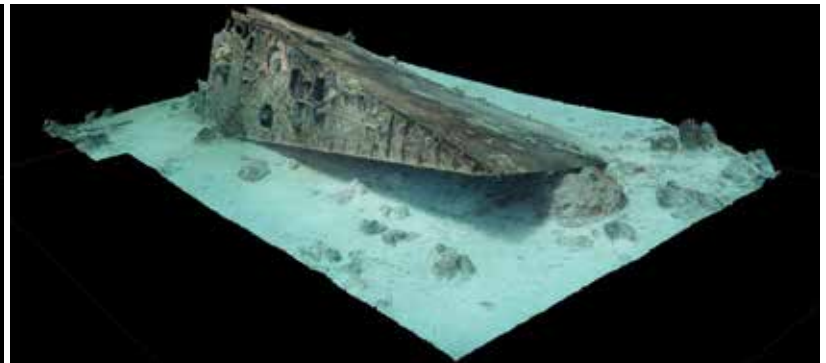
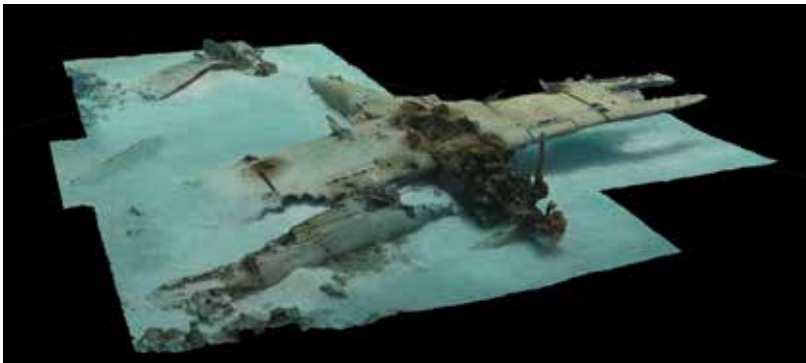
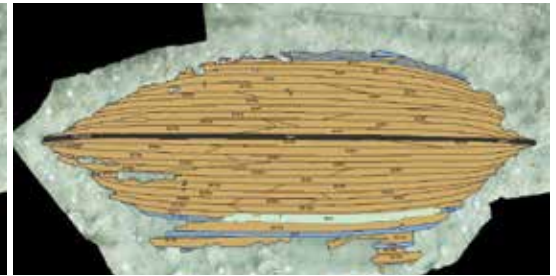
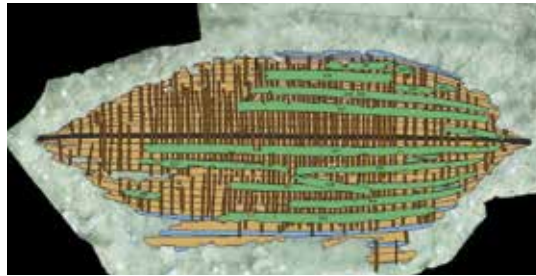
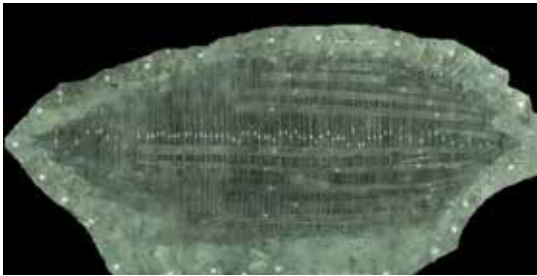
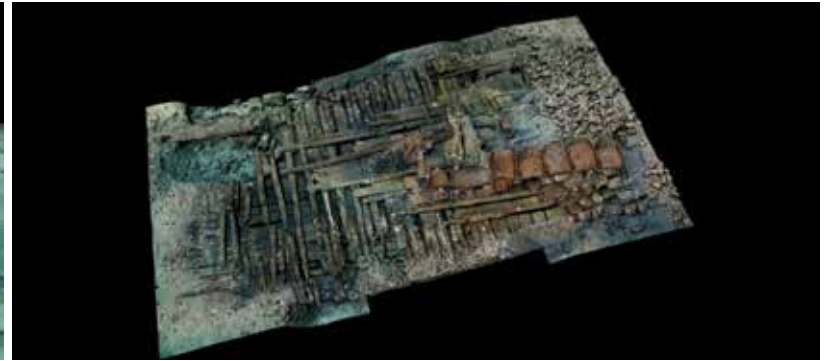


# ARS NAUTICA – SEAFARING THROUGH THE AGES – INTERNATIONAL COURSE WORKSHOP PHOTOGRAMMETRY IN UNDERWATER ARCHAEOLOGY

## THEORY AND PRACTICE



### LOCATION

Dubrovnik, Croatia, 17 - 24 June 2018

### ACCOMMODATION

Inter-University Centre, Dubrovnik

### ORGANIZERS

University of Zadar  
A.P.P.A.R.A.T.U.S. llc.  
ARS NAUTICA Institute for  
Maritime Heritage

### COURSE DIRECTORS

Dr Kotaro Yamafune,  
A.P.P.A.R.A.T.U.S. llc., Japan  
Asst. Prof. Dr Irena Radić Rossi,  
University of Zadar, Croatia



LEARN WHAT PHOTOGRAMMETRY IS, AND HOW TO USE IT IN UNDERWATER ARCHAEOLOGY!

SHOOT THE PHOTOS AND LEARN HOW TO PROCESS THEM INTO 3D MODELS!

PRACTICE PHOTOGRAMMETRY FOR ARTIFACTS!

LEARN HOW TO SCALE-CONSTRAIN YOUR 3D MODELS, AND HOW TO TAKE MEASUREMENTS FROM THEM!

DISCOVER HOW TO CREATE A LOCAL COORDINATE SYSTEM ON YOUR ARCHAEOLOGICAL SITE!

GENERATE ORTHOPHOTOS, GENERAL ELEVATION MAPS, DRAWINGS FROM ORTHOPHOTOS, AND SECTION PROFILES!

EXPERIMENT WITH POINTS BASES DEVIATION ANALYSIS SOFTWARE!

SHARE YOUR 3D MODELS ON A WEBSITE!

AND ABOVE ALL, ENJOY THE FRIENDLY WORKING ATMOSPHERE OF THE INTER UNIVERSITY CENTRE IN BEAUTIFUL DUBROVNIK!!!

## PROGRAMME SUMMARY

During the past decade, photogrammetry rapidly evolved from a sophisticated skill practised by a small group of devoted experts with appropriate equipment and special software, to a broadly available tool, which can be managed by anybody, with no restrictions regarding educational level, professional background, or virtual modelling experience.

Photogrammetry is now a common, indispensable tool, which, in skillful hands, can produce excellent results within the working process for which it is designed. Although technological upgrades continue to improve the hardware, software and accuracy of photogrammetric recording, the true innovation lies in avoiding over-reliance on photogrammetry, but instead striving to understand its drawbacks and limitations. Simply performing photogrammetry as the end goal of an underwater excavation is not sufficient.

Considering the stated premises, the International Course Workshop Photogrammetry in Underwater Archaeological Research - Theory and Practice aims at introducing the participants to the theory and practice of the photogrammetric photo and video recording, for the needs of underwater archaeological research, taking into consideration all its advantages and constraints.

The workshop is organized in the framework of the Archaeology of Adriatic Shipbuilding and Seafaring (AdriaS) Project, supported by the Croatian Science Foundation (IP-09-2014-8211).

## TUITION FEES:

The tuition fee is 350 EUR, including accommodation for 7 days (double rooms) at the Inter- University Centre.

## FOOD:

All the meals for the participants of the course workshop, are available at the restaurant Orhan, located in the small bay in the immediate vicinity of the Inter-University Centre (2 minutes walking distance).

The price for the participants of the course workshop, including breakfast, lunch and dinner, from 18<sup>th</sup> to 23<sup>rd</sup> June is 280 EUR

The price for the participants of the course workshop, including breakfast and lunch (or dinner) from 18<sup>th</sup> to 23<sup>rd</sup> June is 180 EUR.

## TRAVEL EXPENCES:

Participants have to cover their own travel expenses.

## APPLICATION PROCEDURE:

In order to apply, please, respect the following steps:

1. Fill in the attached application form in PDF format;
2. Write a short motivation letter (up to one page);
3. Send the documents via e-mail to [ars.nautica.institute@gmail.com](mailto:ars.nautica.institute@gmail.com) .

Application online:

1. Fill in the form available at [www.adriasproject.org](http://www.adriasproject.org) ;
2. Write a short motivation letter (up to one page) and attach it to the online application form;
3. Submit the application.

## PAYMENT:

The applicants will receive timely communication about the payment details after admission to the Course Workshop.

## APPLICATION DEADLINE:

The application deadline is 30 April 2018.

All the applicants will be notified about the admission to the course workshop by 5<sup>th</sup> May 2018.

## REQUIREMENTS:

The Course Workshop ARS NAUTICA welcomes undergraduate, graduate and PhD students, and professionals interested in the underwater archaeological research, regardless of their professional background. Previous experience in documentation and research of underwater cultural heritage is welcomed, but not required.

A short motivation letter is required.

The workshop is limited to 20 participants.

## CERTIFICATE OF ATTENDANCE:

A certificate of attendance, signed by the rector of the University of Zadar, representative of the Inter-university Centre, and the course directors will be provided to all the participants which actively attended the full programme.

## ABOUT THE LECTURER



KOTARO YAMAFUNE received his Bachelor of Arts degree in history from Hosei University in Tokyo in 2006. He enrolled in the Nautical Archaeology Program in the Anthropology Department at Texas A&M University in September 2009 and received his Master of Arts degree in August 2012. He continued his studies in the Texas A&M University Nautical Archaeology Program and earned his doctorate in May 2016. His research interests include shipbuilding in Medieval Europe and the European Age of Discovery, and ship reconstruction both manually and through the use of digital tools such as 3D modelling software. He also focuses on photogrammetric recording of submerged cultural heritage, including shipwreck sites. He expands his study interest to museology for nautical and maritime archaeology. In September 2016, he founded A.P.P.A.R.A.T.U.S. Llc. (*Agency of Photogrammetry and Photography for Archaeological Analysis on Terrestrial and Underwater Sites*), as its president. Currently he is helping both terrestrial and underwater archaeological projects and providing workshops in many countries using his photogrammetry skills.

LECTURER: Kotaro Yamafune, A.P.P.A.R.A.T.U.S. Llc.

ASSISTANTS: Katarina Batur, Matko Čvrliak

OFFICIAL LANGUAGE: English

# PROGRAMME STRUCTURE

17 <sup>th</sup> June 2018 Sunday	18 <sup>th</sup> June 2018 Monday	19 <sup>th</sup> June 2018 Tuesday	20 <sup>th</sup> June 2018 Wednesday	21 <sup>st</sup> June 2018 Thursday	22 <sup>nd</sup> June 2018 Friday	23 <sup>rd</sup> June 2018 Saturday	24 <sup>th</sup> June 2018 Sunday
	<b>INTRODUCTION TO UNDERWATER PHOTOGRAMMETRY</b>	<b>ARCHAEOLOGICAL PHOTOGRAMMETRY</b>	<b>SKILLS ON ARCHAEOLOGICAL SITES</b>	<b>UNDERWATER PHOTOGRAMMETRY</b>	<b>CONVERTING 3D MODELS INTO ARCHAEOLOGICAL DATA</b>	<b>CLOSING SESSION</b>	
<b>Morning</b>							
8:00 – 8:45 Breakfast							
	9:00 – 10:15 Welcome Speech Presentation of the Programme	9:00 – 10:15 Photogrammetry from Videos	9:00 – 10:15 How to create local coordinate system	9:00 – 10:15 Methodology for underwater photogrammetry	9:00 – 10:15 Generating Orthophotos	10:00 – 11:30 Presentation of the Results	
	10:30 – 11:30 Introduction to Photogrammetric recording	10:30 – 11:30 Artifacts Photogrammetry (Capturing 360)	10:30 – 11:30 Preparation for Recording	10:30 – 11:30 Camera Settings for Underwater Photogrammetry	10:30 – 11:30 Generating General Elevation Maps (GEMs)		
	11:45 – 13:15 Photography for Photogrammetry	11:45 – 13:15 Artifacts Photogrammetry (Capturing 360)	11:45 – 13:15 Record a Simulated Archaeological Site	11:45 – 13:15 Record a Simulated (UW) Archaeological Site	11:45 – 13:15 Generating Sketch-like Drawings from Orthophotos	11:45 – 13:15 Closing Remarks	
13:30 – 15:00 Lunch break							
<b>Afternoon</b>							
	15:00 – 16:00 Photo Shooting Practice	15:00 – 16:00 How to Scale-Constrain 3D Models	15:00 – 16:00 Processing Data	15:00 – 16:00 Processing Data	15:00 – 16:00 Generating Section Profiles in Rhinoceros	Dubrovnik City Tour (optional)	
	16:15 – 17:15 Processing Photos into 3D Models	16:15 – 18:15 How to Take Measurements from 3D models	16:15 – 18:15 Sharing 3D Models on Webpage (Sketchfab)	16:15 – 18:15 Creating Underwater Local Coordinate System (Rhino)	16:15 – 18:15 Using Points Bases Deviation Analysis Software (CloudCompare)		
	17:30 – 18:45 Special talk: Smiljko Rudan - Tomislav Prosinečki Numerical Modelling in <i>Nautical</i> Archaeology						
20:00 – 22:30 Dinner							
Arrival of the participants							Departure of the participants



### GENERAL INFORMATION:

Venue:  
Inter-University Centre  
Don Frana Bulića 4, 20000 Dubrovnik, Croatia

Tel.: +385 20 413 626, 413 627  
Fax: +385 20 413 628  
e-mail: [iuc@iuc.hr](mailto:iuc@iuc.hr)

### FOR FURTHER INFORMATION PLEASE CONTACT :

Katarina Batur, [kbatur@unizd.hr](mailto:kbatur@unizd.hr)



SVEUČILIŠTE U ZADRU  
UNIVERSITY OF ZADAR

