

Title:/Titre:/Titel:

Accuracy Study of Photogrammetric Deformation Measurements
at a Test Field

Author (s)/Auteur (s)/Autor (en):

M.Orhan ALTAN

Abstract:/Sommaire:/Zusammenfassung:

At a test field, where some points could be moved by known amounts, the accuracy of photogrammetric deformation measurement techniques is examined with regard to camera position and number of passpoints. For various camera positions the obtained accuracy is given in graphics and tables for different number of passpoints

Title:/Titre:/Titel:

Geodetic versus photogrammetric restitution procedures

Author (s)/Auteur (s)/Autor (en):

M.Aytaç, G.Toz, S.Külür, G.Aydoğdu, A.Korkut

Abstract:/Sommaire:/Zusammenfassung:

In this study, the photogrammetric and geodetic restitution procedures for the historical monuments are compared in term of the accuracy and practical usage.

Applications are done on the Çemberlitaş monument from the Byzantium era. The results are presented according to this application.

Title:/Titre:/Titel: Practical Experience of Photogrammetry in Offshore environment.

Author (s)/Auteur (s)/Autor (en): Willem Bakhuizen / Charles Strickland

Abstract:/Sommaire:/Zusammenfassung:

A short introduction of the developed system SEAGLE 90 is given. Results of practical tests are showed. Practical experience in the offshore environment is discussed.
Main purpose to introduce photogrammetry to non-traditional work areas for stereophotogrammetry.

Title:/Titre:/Titel:

COMPUTING THE OBJECT SPACE COORDINATES OF A POINT
BY THE LINEAR EQUATIONS IN TERRESTRIAL PHOTGRAMMETRY

Author (s)/Auteur (s)/Autor (en):

Hüseyin Gazi Baş, Photogrammetric Engineer, M.Sc.

Abstract:/Sommaire:/Zusammenfassung:

To compute the object space coordinates of a photographic point which is basically imagined in two common photos is generally used the space intersection method in photogrammetry. In that method, non-linear colinearity equations is linearised by the help of serial expansion.

In my study, the object space coordinates of a photographic point is obtained without using the conventional linearisation method. This is performed by using directly the parameters of the exterior orientation of the camera and the plate coordinates of a point in two common photographs, which are used in the colinearity equations.

In addition, the established mathematical method is tested by means of a simulated model.

Title:/Titre:/Titel:

STEREO-VIDEO PHOTOGRAMMETRY

Author (s)/Auteur (s)/Autor (en):

PROFESSOR CHARLES.H.BEDWELL

Abstract:/Sommaire:/Zusammenfassung:

In applications involving remote 3-Dimensional analysis and measurement in unfavourable or dangerous environments, such as underwater, or where there is movement, or very small objects are involved, photogrammetry may be more adequately covered by a stereo video system than by conventional photographic techniques.

Advantage can then be taken of using appropriate video tubes or solid-state sensors appropriate to the viewing conditions, eg, poor illumination.

The Author discusses how a versatile photogrammetric viewing instrument, such as the Zeiss Interpretoscope, can be modified to accept video monitors instead of photographic plates or films to view the stereo model. 3-Dimensional encoded data can be obtained from video or from film by light markers and electro-mechanical encoders, or also by electronically generated markers and encoding in the case of a purely video system.

In this paper the author discusses the applied research in which he and his team are involved in the development of a suitable system and its applications.

Title:/Titre:/Titel:

DETERMINATION OF DIGGING VOLUME BASED ON THE PHOTOGRAMMETRICALLY OBTAINED DIGITAL TERRAIN MODEL

Author (s)/Auteur (s)/Autor (en): Dr. J. BESENIČAR

Dr. A. KOŠUTIĆ

Abstract:/Sommaire:/Zusammenfassung:

For the sake of planning the production on the open diggings it is necessary periodically /4-12 per year/ to register on the digital model all changes and corresponding volume. It is estimated that the volume of diggings amounts up to several ten million tons per year.

Due to non-topographical surfaces it is necessary to solve the problem of interpolation /determination of gravitation area of each point/ and by computer. This paper deals with one of possible solutions of volume determination.

Antoine Bret. DRNR-BCT, Centre d'Etudes Nucleaires de Cadarache,
13115 Saint-Paul-Lez-Durance, FRANCE.

Abstract of paper :

CONTRIBUTION OF CLOSE-RANGE PHOTOGRAMMETRY IN NUCLEAR INSPECTION TECHNIQUE.

The periodic "surveillance and in-service inspection" planned for the liquid metal cooled fast reactor SUPER PHENIX (1200MWe), during the shutdown periods for fuel handling operations, has led in recent years, to the development of optical viewing devices. Periscopes fitted with special cameras, light-sources, have been built for the examination of reactor components in the gas space above the liquid sodium level and special light-trap targets were welded on reflecting structures.

The purpose of this paper is to present the contribution of close-range photogrammetry as an inspection technique in dimensional measurement procedures of reactor Internals, procedures characterised by the use of instruments under hostile environment conditions:

- Highgamma radiation
- relatively low neutron radiation
- sodium vapor in nitrogen gas atmosphere
- Temperature levels around 200°C
- Restricted access

Title:/Titre:/Titel: A Large Format, Microprocessor Controlled Film
Camera Optimized for Industrial Photogrammetry

Author (s)/Auteur (s)/Autor (en): Duane C. Brown

Abstract:/Sommaire:/Zusammenfassung: The CRC-1 is a roll film metric camera of large (23 x 23 cm) format designed to meet the most exacting demands of close-range industrial photogrammetry. Each of the various interchangeable lens cones is precisely calibrated for both infinity and unit magnification in order to permit rigorous corrections for distortion to be generated for all object distances. The problem of film deformation over the large format is solved by means of a proprietary, patented reseau platen of extreme flatness. All operating functions of the camera are controlled and continuously monitored by a built-in Intel 8751 Microprocessor and associated circuitry and transducers. Several of the physical and operational features of the camera were expressly optimized to take best advantage of data reduction by means of the bundle adjustment with self-calibration. Others were optimized to exploit the extraordinary possibilities afforded by retrotargeting technology.

Title:/Titre:/Titel:

Einsatz und Verwendungsmöglichkeiten von ferngelenkten Ballonen und Luftschiffen als Kameraträger.

Author (s)/Auteur (s)/Autor (en):

Karl Ludwig Busemeyer

Abstract:/Sommaire:/Zusammenfassung:

Der Beitrag skizziert die Geschichte von Ballon- und Luftschiffahrt und diskutiert Vor- und Nachteile der verschiedenen Systeme.

Ein neues Luftschiffsystem mit Verwendung von Heißluft als Auftriebsmedium wird vorgestellt. Erfahrungen aus Einsätzen werden mitgeteilt. Ferner liefert der Beitrag mögliche Weiterentwicklungen dieses Systemes.

Den Abschluß bildet das Aufzeigen von Möglichkeiten und Grenzen der Verwendung unbemannter Ballon- und Luftschiffsysteme bei der Nahbereichsvermessung.

Title:/Titre:/Titel:

An Application of Holography: the storage and data retrieval from dental study models.

Author (s)/Auteur (s)/Autor (en):

BUTCHER, G.W., PARKER, R.A., WRIGHT, L.

Abstract/Sommaire/Zusammenfassung

Extensive use is made in orthodontic dentistry of plaster study models which are prepared at intervals during treatment. They record alterations in the patient's dentition due to growth, development and treatment. A number of problems are associated with their use, e.g. fragility, filing, storage and retrieval during treatment, teaching and research. Many major treatment, research and administrative centres have more than a quarter of a million sets of study models occupying valuable space. Holography offers a practical alternative as holograms could permit storage of study model information in patient's notes or records.

An investigation has been carried out into various holographic techniques and their application to this problem. Results of a simple measuring system are recorded and compared with other close range photogrammetric techniques.

Title:/Titre:/Titel:

ANALYTICAL TERRESTRIAL TRIANGULATION METHOD

Author (s)/Auteur (s)/Autor (en):

Jozef Čerňanský

Abstract:/Sommaire:/Zusammenfassung:

The paper presents the principles of a new method of analytical terrestrial photogrammetry so called analytical terrestrial triangulation method. This method is based on the multiple camera stations from which horizontal and vertical angles of control points are measured to determine photograph parameters and coordinates of perspective centers. The method was used at the photogrammetric control of the long highway bridge in ČSSR.

Title:/Titre:/Titel: APL Application Software For Analytical
Underwater Photogrammetry

Author (s)/Auteur (s)/Autor (en): Egon Dorrer

Abstract:/Sommaire:/Zusammenfassung:

Major steps in the process of developing an operational software system and its application to high precision analytical underwater photogrammetry are described. The paper stresses the main differences of a particular but frequent multimedia case as compared to the conventional photogrammetric case, as well as its inherent problems and difficulties. Emphasis lies on the analytical approach towards a suitable numerical solution of the "refracto-collinearity equation", spatial multimedia resection and intersection. The results of extensive numerical simulation studies in a particular situation enforced by predetermined environmental conditions are presented and compared to the results of real experiments.

The solution is entirely based on APL as a modern time-saving and highly efficient programming language.

Benjamin Shmutter & Technion, Israel Institute of Technology, Technion
City, Haifa 32000, Israel.

U Ethrog

Abstract of paper (By B Shmutter and U Ethrog) :

TOPIC: DETERMINING DIMENSIONS OF A CYLINDRICAL UNDERGROUND STRUCTURE

Dimensions of an underground storage facility are determined from close range photographs. The method is based on defining radius-variations along vertical profiles of the tank, derived from models not related to a common reference frame, and without using control points for orientation purposes.

A discussion of the attainable accuracy and an example of a performed project complete the presentation of the method.

Title:/Titre:/Titel:

ULTRA-CLOSE RANGE NON-METRIC CAMERA SET-UP ON AN ANALYTICAL PLOTTER

Author (s)/Auteur (s)/Autor (en):

H. FUCHS

Abstract:/Sommaire:/Zusammenfassung:

Surveying of objects in ultra-close range is only possible with photographs made by cameras with macro lenses. That means one has to set up models which consist of non-metric cameras. A pilot project is presented using the analytical plotter DSR-1 from Kern and the software package CRISP. A simple way is shown how to create the necessary ground control points for such a case.

Title:/Titre:/Titel:

COMBINATION OF TERRESTRIAL PHOTOGRAMMETRIC INTERSECTION
AND THE TIME BASE

Author (s)/Auteur (s)/Autor (en):

Viktor GREGOR

Abstract:/Sommaire:/Zusammenfassung:

Repeated photogrammetric measurements of displacements caused by landslides or by any kind of deformations are usually performed using the method of "time base". Photography taken at each measurement with the same interior and exterior orientation yields displacements in the plane parallel to the image plane. To determine spatial displacements, the combination of terrestrial photogrammetric intersection and time base was applied in the landslide area.

Title./Titre./Titel:

Processing of amateur photographs

Author (s)/Auteur (s)/Autor (en):

Armin Gruen

Abstract /Sommaire /Zusammenfassung

The refinement of analytical methods and the development of more flexible analytical instruments, like analytical plotters, has caused a significant increase in the use of amateur photographs, because the accuracy potential inherent in those photographs can now be exploited more conveniently.

This paper gives a survey and classification of processing methods for amateur photographs. A special procedure for the processing of single amateur photographs, called "Metric Photo Perspective Transformation" (MPPT), which has been used successfully by the author in different projects, is described in detail.

Also addressed is the processing of amateur photographs in an on-line environment. Particularly emphasized are the determinability of additional parameters for reliable self-calibration and the detection of blunders in a sequential estimation process.

Title / Titre / Titel

Calibration in Close Range Photogrammetry

Author (s) / Auteur (s) / Autor (en)

I.A. Harley

Abstract / Sommaire / Zusammenfassung

The author reviews the requirements for calibration in close range photogrammetry and discusses the methods which are in use.

Title:/Titre:/Titel:

LENGTH-CALIBRATION BY CLOSE RANGE PHOTOGRAMMETRY AT LARGE PHOTO SCALE

Author (s)/Auteur (s)/Autor (en):

H. Heister and J. Peipe

Abstract:/Sommaire:/Zusammenfassung:

Currently precise length-calibration of e.g., tapes, glass-scales and leveling rods is carried out by various calibration apparatus that detect the graduation lines fully or semi-automatically by using a laser-interferometer as the standard of length. The main problem of the photoelectric line reading is the definition of the centre of the line especially for scales showing damages and signs of frequent use.

An experimental approach applying photogrammetry as an optical-visual method for the detection of graduation lines is described in this paper. To achieve the desired accuracy photo scales about 1 : 1 are required. The equipment used consists of a camera Rolleiflex SLX with réseau, a Zeiß Planicomp C 100 in conjunction with the bundle adjustment program MOR.

Title:/Titre:/Titel:

Summary of Technical Contributions of ISPRS WG V/1 in Rio

Author (s)/Auteur (s)/Autor (en):

H. M. Karara

Abstract:/Sommaire:/Zusammenfassung:

This oral report will summarize the highlights of information contained in papers presented in Rio and/or expressed in the discussions. New trends in non-topographic photogrammetry will be identified and avenues for further progress will be discussed.

P.S. This report will be compiled during the Rio Congress, and thus no written version will be submitted for inclusion in the Archives.

John F Kenefick: Photogrammetric Consultant, Inc. P O Box 3556,
Indialantic, FLORIDA 32903. U S A.

Abstract:

TITLE: TRANSFER OF PHOTOGRAMMETRIC TECHNOLOGY TO AIRCRAFT MANUFACTURING

Photogrammetry, the science of producing reliable measurements of scenes from photographs, has been in a continuing state of development since about 1860. When properly administered, the accuracy of the process is beyond repute.

The U S shipbuilding industry widely adopted the method during the mid-1970's. Aircraft manufacturers are just now following suit, after having conducted "pilot projects" as a means for evaluation. Two basic methods of photogrammetry are described, as are several pilot projects conducted by major aircraft manufacturers. Final discussion is given to a commercially available photogrammetric system which is particularly well suited to periodic inspection of aircraft tools.

Title:/Titre./Titel: High Precision Survey of Cooling Towers
at Any Height by Analytical Photogrammetry

Author (s)/Auteur (s)/Autor (en): E.KRUCK and B.P.WROBEL

Abstract:/Sommaire:/Zusammenfassung:

There is an interest of power plant proprietors in monitoring periodically the shape of cooling towers. Height, shape and surface of cooling towers built out of steel concrete are demanding very high standards for a survey method, especially as far as are concerned the short survey time (some hours) and the great number of points on the shell (some hundreds) which have to be determined. In this paper a report will be given on the general concept of a survey by analytical photogrammetry including some few geodetic measurements. This method can be applied to towers at any height. The concept has been tested at a tower 162 meters high, using a helicopter for taking the photos. A very high and homogenous precision has been obtained for the object coordinates of points: $s_x \sim s_y \sim s_z \sim 3$ to 6 millimeters.

Title:/Titre./Titel:

Ein neues RPV für Luftaufnahmen im Nahbereich

Author (s)/Auteur (s)/Autor (en):

Michael Kügelken

Abstract:/Sommaire:/Zusammenfassung:

Ein neuer ferngelenkter Flugkörper für Luftaufnahmen im Nahbereich wird vorgestellt. Der Flugkörper hat einen Rogalloflügel mit einer Spannweite von 2.50 m und ein Dachleitwerk, was ein extrem gutmütiges Flugverhalten bei sehr geringer Fluggeschwindigkeit ermöglicht. Erste Einsatzerfahrungen mit diesem System werden mitgeteilt.

Title:/Titre:/Titel:

Ultraleicht-Flugzeuge als Kameraträger für Luftaufnahmen

Author (s)/Auteur (s)/Autor (en):

Michael Kügelgen

Abstract:/Sommaire:/Zusammenfassung:

Konstruktionsmerkmale und technische Daten von Ultraleicht-Flugzeugen als Kameraträger werden beschrieben.

Für die Befestigung der Aufnahmekammer wurde eine Kamera-
plattform entwickelt. Die Plattform ist kardanisch gelagert
und wird über ein Kreisel-Servo-System aktiv angelenkt, so
daß die Kamera trotz Turbulenzen ihre einmal vorgegebene
Aufnahme-Position beibehält.

Erste Einsatz-erfahrungen mit diesem System werden mitgeteilt.

Title /Titre /Titel

EVALUATION OF THE WILD INDUSTRIAL MEASUREMENT SYSTEMS

Author (s)/Auteur (s)/Autor (en):

S.A.Kyle

Abstract:/Sommaire:/Zusammenfassung

A calibration test of the Wild industrial photogrammetric system, comprising P31 camera (10cm) and Aviolyt AC1, has been carried out against a coordinate measuring machine for typical geometric configurations. A new, online industrial survey system, which uses computer-supported T2000 theodolites, is also introduced and is similarly calibrated. Practical examples of the use of both systems are discussed, together with the potential to interface measurements to the Leitz industrial software package, MESCAL.

Title:/Titre:/Titel:

"New trends in on-line photogrammetry and its application to mensuration"

Author (s)/Auteur (s)/Autor (en):

Dr. Klaus Linkwitz

Abstract:/Sommaire:/Zusammenfassung:

Opto-electronical elements placed into the focal plane of a photogrammetric camera offer the possibility of on-line photogrammetry. Typical properties of such elements are discussed and results in practical mensurations are given.

Title /Titre./Titel

A Finite Element Analysis of the Effect of Having Fiducial Marks in Non-Topographic Photogrammetry

Author (s)/Auteur (s)/Autor (en):

Munji, Riadh A.

Abstract /Sommaire./Zusammenfassung

Fiducial marks has been installed in two Bronica ETRS non-metric cameras. Using the finite element approach, those cameras were calibrated using the machine co-ordinates and photo coordinates. Using the machine co-ordinates directly in the collinearity equation resulted in a different focal length from results obtained using the photo coordinates.

This difference in focal length is mainly due to a slightly different principal point computed by the two solutions. A differential equation has been derived to express these changes. An experimental verification of the proposed differential equation has been carried out, which shows the effect of not having fiducial marks in a non-metric camera.

Title./Titre./Titel

The Finite Element Approach Versus Conventional Self-Calibration : Results of a Non-Metric Camera Test

Author (s)/Auteur (s)/Autor (en):

R.A. Halim Munjy and C. S. Fraser

Abstract /Sommaire /Zusammenfassung:

This paper compares results obtained when a finite element approach, rather than the conventional self-calibration method, is used in modelling departures from collinearity in analytical non-metric image restitution. Emphasis is placed on both the precision on "stable" calibration parameters recovered, and on the final accuracies obtained in object space positioning.

Title:/Titre:/Titel:

General Relative Orientation and General Spatial Resection in Numerical Photogrammetry.

Author (s)/Auteur (s)/Autor (en):

Torbjørn Nørbech

Abstract:/Sommaire:/Zusammenfassung:

The relative orientation and spatial resection are nonlinear problems. Existing methods to solve these problems need a priori knowledge of approximate values for the unknown parameters.

In many applications of close-range photogrammetry the work of procuring these a priori values could be rather cumbersome and might result in much time consume and extra costs.

General algorithmes for the relative orientation and spatial resection are therefore presented. These algorithmes are based on iterative solutions by means of initial approximate values chosen by the algorithmes. That means that the user do not have to know these error values. The solution is achieved by an appropriate trial- and error technique. The algorithmes are therefore regarded to be quite general.

Title:/Titre:/Titel:

The effect of field angle on the position of the outer perspective centre.

Author (s)/Auteur (s)/Autor (en):

Simon Oldfield

Abstract:/Sommaire:/Zusammenfassung:

Close range photogrammetry normally assumes a fixed point for the outer perspective centre.

This paper examines the validity of the assumption for very high accuracy work, and gives experimental results for the variation in a UMK10-NF camera.

Title:/Titre:/Titel:

Analysis of Deformations in Photogrammetry by the Velocities Method

Author (s)/Auteur (s)/Autor (en):

Papo H. B. and Perelmuter A.

Abstract:/Sommaire:/Zusammenfassung:

The concept of dynamic networks is applied to the analysis of deformations. Data obtained by terrestrial or aerial metric cameras at several epochs are adjusted by the so called "velocities method". Parameters in that model which are regarded as the signals of the deformation phenomenon are point-velocities and accelerations. Terrestrial photography with metric cameras of 240 m. high chimneys combined with precise geodetic measurements are analysed by the "velocities method" with the objective of determining cyclic deformations caused by wind and sun.

Title:/Titre:/Titel: Retreat of the slope plotted by the method
of terrestrial photogrammetry

Author (s)/Auteur (s)/Autor (en): Petráš Jozef, Midriak Rudolf

Abstract:/Sommaire:/Zusammenfassung:

The authors interpret and evaluate dynamics of the slope retreat in the shape of valley bottom by the terrestrial photogrammetry. The denuded slope is an active ravine in a meander of the creek in the Paleogene System of the flysh zone in NE Slovakia /the Carpathians/. The evaluation was done on the basis of 8 measurements with interval of 0.5 year - each year in April and in August. Contribution of morphogenetic factors in spring-summer part of year as in autumn-winter part was stated. Results are illustrated graphically /original map scale 1:50/ with variation of contour lines, border line of vegetation cover as well by means of vertical sections.

Title./Titre./Titel:

Program System TEBIT - Overview and basic Philosophy

Author (s)/Auteur (s)/Autor (en):

Pietschner, J. ; Schulz, H.-U.

Abstract /Sommaire /Zusammenfassung Control points are of basic importance in photogrammetry. They are used for indirect determination of exterior orientation and correction of systematic errors in obtaining and plotting the photos. In the measurement of three-dimensional objects photogrammetric control points are determined by multistation photographs taken with different camera directions. The acronym TEBIT is derived from the German expression "Terrestrische Bildtriangulation" (terrestrial phototriangulation). The program system TEBIT allows analytical point determination in single models, photo series or any other photo combination. Applications include architecture, construction, mine surveying, engineering, shipbuilding and similar fields. TEBIT can be used on all minicomputers with a 16 bit word length. The programming language is FORTRAN IV. The Program system TEBIT meets the demands for a program of photogrammetric point determination in close-range photogr.

Title:/Titre:/Titel:

AN INTEGRATED SYSTEMS APPROACH WITH RASTER SCAN SENSORS
FOR INDUSTRIAL ROBOTIC CONTROL

Author (s)/Auteur (s)/Autor (en):

DR. H.F.L. PINKNEY

Abstract:/Sommaire:/Zusammenfassung:

This paper describes the development and applications of a Real-Time Video Photogrammetry System for 3 Dimensional Robotic Control. Based on an integrated control systems engineering approach with computer controlled on-line window aperture discrimination-moment sampling processors; for raster scan sensors, the system has a broad range of applications. Within this approach, the on-line photo-coordinate derivations, photogrammetric solution algorithms, filtering and coordinate system transformations become integrated modules in the real-time control loop architecture. Since the photogrammetrically derived 6 degree of freedom information is used in the high speed guidance and control task, the "tailoring" of the photogrammetric design for machine control dynamics and fail-safe requirements becomes important, and represents a newly developing area of photogrammetric engineering. Examples of current industrial robotic and space applications are highlighted.

Title:/Titre:/Titel:

Time-average Holography for Quantitative Vibration Analysis

Author (s)/Auteur (s)/Autor (en):

Ryszard J. Pryputniewicz

Abstract:/Sommaire:/Zusammenfassung:

Procedures for quantitative interpretation of time-average holograms are discussed and illustrated with examples. The results obtained directly from the time-average holograms are used to provide boundary conditions to "run" finite element computer models of the vibrating beams. Once the "correct" boundary conditions are established, the agreement between the experimental and the analytic results is very good. It is shown that the analytic method, with an appropriate set of boundary conditions, can be used to reliably predict the dynamic response of a loaded structure.

Title:/Titre:/Titel:

Speckle Metrology: Computer Aided Analysis of Three-Dimensional Deformations

Author (s)/Auteur (s)/Autor (en):

Ryszard J. Pryputniewicz

Abstract:/Sommaire:/Zusammenfassung:

It is shown that the parameters characterizing Young's fringes, observed during reconstruction of a double-exposure specklegram, define an observed displacement vector, which is a projection of an unknown object deformation onto a plane parallel to the specklegram. Then, the observed displacement vector is related to the product of the projection matrix with the unknown deformation vector. Since there is a unique projection matrix for each of specklegrams, recorded from a different direction, there can be one such equation written for every specklegram. Each of these equations relates the observed displacement, recorded by the particular specklegram, to the unknown deformation. Because of the matrix operations needed to compute the unknown deformation vector, the resulting system of equations is particularly suited for solution on a computer. Computer procedure for solution of these equations is outlined, and its application in studies of three-dimensional deformations of objects is discussed and illustrated with examples. The correlation between the experiments and theory is good.

Title:/Titre:/Titel:

High Precision Hologrammetry for Quantitative Analysis of Structural Deformations

Author (s)/Auteur (s)/Autor (en):

Ryszard J. Pryputniewicz

Abstract:/Sommaire:/Zusammenfassung:

A heterodyne hologrammetry system for accurate and precise measurement of structural deformations is described. In this system, a different reference beam is used for each of the two exposures. The beams are set up in such a way that, during reconstruction, they can be reproduced independently with an introduction of a known frequency shift between them. The resulting interference pattern is intensity modulated at a frequency equal to the frequency difference between the two reconstructing beams. These intensity variations are measured by a fiber-optic detector as a function of phase differences. The phase differences, in turn, are related to the object's displacements and deformations. It is shown that, using the heterodyne hologrammetry, displacements and strains can be measured noninvasively with accuracies of 0.3 nm and 0.000,02 %, respectively. Representative examples illustrate applications of the heterodyne hologrammetry to measurements where high accuracy and precision are required.

Title:/Titre:/Titel:

La photogrammétrie sous-marine et le système CERCOMEX 1/10 de mm par 200 m.

Author (s)/Auteur (s)/Autor (en): M. PUYBOUFFAT (DIVA) - M. BLANSTEIN (SETP)
MM. HUE et LEGRAND (CNEXO)
MM. CORNELOUP - LEEHTEN - SPEDER (IUT - AIX EN PROVENCE)

Abstract:/Sommaire:/Zusammenfassung:

La photogrammétrie sous-marine a été jusqu'à présent pénalisée par défaut de chambre métrique sous-marine. Les chambres CERCOMEX munies d'une optique conçue pour la prise de vue sous-marine et d'un mécanisme d'application de film sont de véritables chambres métriques. Leurs caractéristiques, distance principale, distorsion, sont étalonnées et stables pour la totalité des conditions opératoires. Des outils spécifiques à la prise de vue sous-marine ont été réalisés de façon à se placer dans les conditions de la photogrammétrie rapprochée : bâti support, système de repérage. Pour le restituteur, toutes les procédures traditionnelles deviennent utilisables. Ainsi, il est devenu possible de réaliser la cartographie du sol marin, ou de fouilles archéologiques suivant le procédé de la photogrammétrie aérienne. Les applications pour l'industrie Off-shore sont nombreuses : géométrie d'un noeud, cartographie d'endommagement ou de corrosion sur structure ou coque de bateau, relevé de déformation d'hélice, métrologie de pièces mécaniques en milieu aquatique et/ou hostile. Ce système, actuellement manipulable par plongeur, peut-être installé sur engin sous-marin de façon à accroître et automatiser les opérations. Les caméras photogrammétriques ont été testées dans les locaux du CNEXO (Centre National pour l'Exploitation des Océans).

Les essais en pression et en bassin ont permis de vérifier la qualité et la stabilité de leurs performances ainsi que leur grande facilité de mise en oeuvre.

Title:/Titre:/Titel:

Measurement of Ultrasonic Imagery Using A Photogrammetric Method

Author (s)/Auteur (s)/Autor (en):

Gary Robertson, Dr.C.W. Miles

Abstract/Sommaire/Zusammenfassung:

A photogrammetric method is used to analyze ultrasonic images in Real time, and off line situations. This paper will discuss the different ultrasonic systems, the measuring procedures and analysis of images. A medical evaluation will be made of the results. Practical applications in the medical field will be discussed.

Gary Robertson ~~will~~ be attending the congress and will give the paper.

Title:/Titre:/Titel:

Examination of Geometry of the Terrestrial Camera

Photographs

Author (s)/Auteur (s)/Autor (en):

Preuss Ryszard

Abstract:/Sommaire:/Zusammenfassung:

In this paper the results of calibration of some series photographs which were taken by Phototheo 19/1318, UMK-10 Zeiss Jena and Wild P-31 will be presented. An analysis of the interior orientation elements and discrepancies of the successive photographs will be carried out. In the conclusion the results of camera calibration in measurement of the antenna will be taken into account.

Title:/Titre:/Titel:

USE OF THE PROJECTIVE TRANSFORMATION IN TERRESTRIAL ANALYTICAL PHOTOGRAMMETRY

Author (s)/Auteur (s)/Autor (en):

Ľubomír Salkovič

Abstract:/Sommaire:/Zusammenfassung:

This paper deals with the new analytical method of projective transformation in terrestrial photogrammetry. The transformation includes also the correction of errors of interior and exterior orientation parameters. The method was used in non - topographic application of terrestrial photogrammetry to determine the dam deformations.

Title:/Titre:/Titel:

Photogrammetric survey, with inclined axis shots, of archaeological areas in Reggio Calabria (Italia).

Author (s)/Auteur (s)/Autor (en):

Carmelo SENNA

Abstract:/Sommaire:/Zusammenfassung:

The reasons why highly inclined photogrammetric views have been adopted are explained, as well as the method followed for the picture operations themselves (the latter have been obtained by use of a special instrument for the lifting of the camera): as a consequence the operations of topographic datum and photogrammetric plotting are described (the latter made with an analytic plotting instrument).

Both the difficulties during the shot stage and during the plotting stage are underlined in a typical example of photogrammetric work, which is "difficult" but also unfortunately frequent in terrestrial photogrammetry.

Title:/Titre:/Titel:

Stereomicrograms by a specially designed Microscope and Röntgen Photogrammetry and their practical Application to Medical Engineering

Author (s)/Auteur (s)/Autor (en):

Prof. Dr. Taichi Oshima

Abstract:/Sommaire:/Zusammenfassung:

The newly designed microscope was used to take the stereomicrophotos for the precise quantitative morphological details of neuronal elements, especially the size of neurons including its dendrites. The scale of mapping is 400:1 with a contour interval of 2.5 micron.

Röntgen photogrammetry has been done for the precise measurement of the kidney and a specially designed plotter and röntgen photogrammetry by the Sokkisha Co. Ltd. was used

This paper describes the instrument mechanism and measurement system and some practical example of measurement applied to the medical field.

Title:/Titre:/Titel:

Development of Radicon (Radio Control) System using Model Plane and Kite Balloon and their some Applications.

Author (s)/Auteur (s)/Autor (en): Prof. Dr. Taichi Oshima
Kiyoe Miyashita
Ataru Cho

Abstract:/Sommaire:/Zusammenfassung:

This paper describes on the instrumentation and mechanism of Radicon System using model plane and kite balloon which have been newly developed by our group. This research has started in 1971 to take the air photos using the amateur camera which was remodeled several times. At first the camera calibration test has been done and the model plane and kite balloon flight test and then the fully automated mechanism system of camera have been developed.

After taking photos in the field, we confirmed to be able to take the good quality of photos which can be used for measurement and interpretation.

This paper discusses on the fundamental experiment on instrument mechanism and system and on the practical examples using this systems.

Title:/Titre:/Titel:

Some examples in Industrial Application of Close-Range Photogrammetry in Japan

Author (s)/Auteur (s)/Autor (en): Prof. Dr. Taichi Oshima
Kiyoe Miyashita
Isamu Yamamoto
Susumu Horibe

Abstract:/Sommaire:/Zusammenfassung: Masahiro Toda

Close-range photogrammetry, previously has been used for measurement of dam deformation and soil volume, but recently this method has been expanded in the wide range of application. There is also a growing demand for quicker and more accurate results. Therefore this paper describes on the method, instruments, analysis and result on the industrial applications of close-range photogrammetry using modern technology.

The objects for measuring may be enumerated in the following order, according to the size :

- (1) Objects measuring from a few meters to 100 meters.
(Air domes, Spherical tanks and Underground tunnels)
- (2) Objects measuring from about 1 meter. (Gas pipes and Vehicle)
- (3) Objects measuring from a few centimeter (cm).
(Screws and Teeth shapes)
- (4) Microscopic objects (Microscopic and X-ray photo & Electron)

Title:/Titre:/Titel:

PROBLEMES CARTOGRAPHIQUES INHERENTS LES RELEVEMENTS EN MATIERE D'ARCHITECTURE ET DES SITES HISTORIQUES.

Author (s)/Auteur (s)/Autor (en):

PROF. B. PAOLO TORSELLO - CLEMENTE DI THIENE

Abstract:/Sommaire:/Zusammenfassung:

La cartographie architecturale ressort de pratiques diverses, le plus souvent individuelles. L'emploi de techniques nouvelles, comme notamment la photogrammétrie, associée à des procédures topographiques conduira à replacer les règles, les méthodes et les techniques de mesure. Les résultats ainsi obtenus auront plus d'homogénéité et seront comparable entre eux et avec les cartes officielles. L'expérience acquise à Montagnana et Vigevano montre la validité de cette perspective de recherche et d'exécution pratique qui, jusqu'à présent n'a pas été objet d'études approfondies. Il est à remarquer, d'autre part, que le système de classement cartésien permet des références aux échelles inférieures des cartes officielles aussi bien qu'aux relèvements des éléments architectoniques qui en développent en détail les composants.

A Double Image X-ray Photogrammetry

Abstract

by S. A. Veress

The double emulsion x-ray film has a very low resolution, thus severely limits the achievable accuracy. This limitation particularly pronounced with convergent geometry.

An elongated vertical base geometry is investigated to eliminate the disadvantages of convergent geometry. The x-ray film double exposed with two anodes. The double images then digitized and the coordinates are reduced.

The present laboratory experimentation indicates that about ten times better accuracy is obtained with such arrangements. The achieved standard errors in x, y, z spatial coordinates is about ± 0.03 millimetre.

Sandor A Veress, 121 More Hall FX-10, University of Washington,
Seattle WA 98195.

Abstract of paper : A BRIDGE DEFORMATION SURVEY

A steel girder bridge has been tested under 150,000 lb load. The static deformation was measured by 70mm MK Hasselblads as well as strain gauges. The comparison of different methods and results will be discussed.

Title:/Titre:/Titel:

MOR - Eine allgemeine Lösung für die Mehrbildorientierung

MOR - A general procedure for multi-image-orientation

Author (s)/Auteur (s)/Autor (en):

Wilfried Wester-Ebbinghaus, Institut für Photogrammetrie und Ingenieurvermessungen, Universität Hannover, Nienburger Str.1, D-3000 Hannover 1

Abstract:/Sommaire:/Zusammenfassung:

The multi-image-orientation system MOR allows a general bundle adjustment with extensive possibilities to include additional information in image and object space, such as horizontal and vertical angles, spacial distances, plains, straight lines, relative orientation of pairs of photographs and a priori given information for all parameters. MOR runs on the mini-computer HP 1000 of the analytical plotter ZEISS PLANICOMP C 100.

Title:/Titre:/Titel:

The Parameters of Convergent Photos for Close
Range Photogrammetry and Their Applications

Author (s)/Auteur (s)/Autor (en):

Yang Xinyu

Abstract:/Sommaire:/Zusammenfassung:

In determining the optimum geometry configuration of convergent photos for close range, we must consider the depth of field of the camera lens and the variations of scale. The optimum values of configuration angle α_0 and convergent angle φ_0 are different for different camera field angle 2β and α_0 is only a relative value. The parameters of convergent case were given by the author for calculating the absolute values of optimum base B. and object distance D., the depth of field, the variations of scale and the relative aperture. A table of the parameters for different cameras is given in this paper. The practical method for the layout of cameras proposed by the author was tested by experiments using metric and non-metric cameras.

Title:/Titre:/Titel:

Investigation on the Hazard of Continental Earthquake
in China by Means of Air Remote Sensing

Author (s)/Auteur (s)/Autor (en):

Zou Xuegong

Abstract:/Sommaire:/Zusammenfassung:

In this paper combining the situation of various earthquake disaster investigation in China by means of air remote sensing, aspects of hazard of earthquake are discussed. China is a country with great earthquakes. The great Tangshan earthquake occurred in 1976 caused the heaviest disasters in the world in this century. In order to investigate disasters of earthquake. The application of air remote sensing to the investigation of earthquake hazard is developed in China. Finally, we hold that applying air remote sensing to the investigation of earthquake hazards a valid way to improve the seismic survey and enrich the contents of studying on earthquake disasters.