



Research and Development Agreement

This Research and Development Agreement ("Agreement") is made

between

Facebook Technologies, LLC (formerly known as Oculus VR, LLC)
represented by its Authorized Representative
1601 Willows Road, Menlo Park, CA 94025

- hereinafter referred to as "Client" -

and

Technical University of Munich
represented by its President
Arcisstraße 21, 80333 Munich

acting through:

Chair of Computer Vision & Artificial Intelligence
Professor Dr. Daniel Cremers
Technical University of Munich
Department of Informatics
Boltzmannstraße 3
85748 Garching
Germany

- hereinafter referred to as "University" -

(each a "Party" or collectively the "Parties").

§ 1 Project Description, Performance

- (1) University will conduct research and development activities for Client ("R&D").

Subject-matter of the Agreement shall be: (A) Delighting of captured 3D models (with known surrounding) and (B) Illumination reconstruction from a captured model

Specifically, University will perform the following R&D during the period from May 1st 2019 to April 30th 2021.

The R&D will be performed pursuant and in accordance with to the Statement of Work attached hereto as **Appendix 2**.


- (2) University agrees to involve only such employees, members and/or other persons in the performance of the R&D who have undertaken to comply with the confidentiality provisions of this Agreement.
- (3) The R&D will be performed in close coordination with Client. Within eight (8) weeks of completion of the R&D, Client will receive a final report that conveys the Results of the R&D in a comprehensible manner.
- (4) ~~University may award subcontracts only after prior written consent of Client; however, University will be responsible for ensuring that the obligations under this Agreement, including, but not limited to, the provisions contained in §§ 5 et seq., are fulfilled.~~

§ 2 Remuneration

- (1) Client will pay to University the amount of € 260.003,63 (in words: Two Hundred and Sixty Thousand and Three Euros and Sixty Three), inclusive of the IA surcharge but plus the statutory VAT, as remuneration for the performance of the R&D specified in § 1.
- (2) The schedule for the payment specified in section (1) will be as follows:

€ 76.090,11 plus of the statutory VAT, within 30 days after signature of the Agreement;

€ 33.913,52 for the IA surcharge set forth in Section 6 (2), within 30 days after signature of the Agreement; and

 **FIVE**
~~Seven~~ equal payments of €30.000, plus of the statutory VAT, every three months after the date of signing of the Agreement (i.e, quarterly payments for 5 quarters).

Payment shall be made upon receipt of invoice/in installments upon University's request to an account to be determined by University:

TU München
Bayer. Landesbank Girozentrale
IBAN: DE 1070050000000024866
Swift: BYLADEMMXXX
USt.-ID-Nr. DE811193231

- (3) This shall not affect the remuneration provisions set forth in § 2, section (4).
- (4) University endeavors to make full use of the options provided under the Bavarian Civil Service Salary Act (*Bayerisches Besoldungsgesetz*) and to reward the services of university professors with an adequate research allowance. Client hereby acknowledges that in compliance with the Bavarian Civil Service Salary Act the professor responsible for the performance of the R&D under this Agreement may, upon application to the President and receipt of the net amount specified in section (1), be granted a research allowance of up to 10% of the net amount specified in subsection (1), provided, however, that the sum of all research and/or teaching allowances granted to a professor shall not exceed his or her annual base salary for each calendar year.

§ 3 Confidentiality, Publications

- (1) University shall treat the confidential information (including, but not limited to, know-how, documentation, project tasks, and business transactions) obtained from Client on the occasion of and/or in connection with this Agreement, the R&D and Results ("Confidential Information") as confidential and shall neither disclose the Confidential Information to third parties nor use it for purposes other than the performance of this Agreement. Confidential Information means any information that is either clearly marked or identified as confidential, or should reasonably be considered as confidential due to its nature. This obligation of confidentiality will terminate after a period of three (3) years from termination of this Agreement.
- The confidentiality obligations shall not apply, if and to the extent that the recipient establishes, as evidenced by documents, that the information communicated
 - is or becomes generally known through no act or omission of the University; or
 - has been or will be lawfully received from a third party not known to have an obligation of confidentiality to Client; or
 - was already known to the University or is developed independently of the R&D pursuant to § 1; or
 - is disclosed after the Client has waived compliance with the confidentiality obligations in writing; or
 - was duly disclosed under court or governmental order.

- (2) Client acknowledges the University's general obligation to publish the type, subject and Results of any research and development activities carried out within University. Any publications during the term of the Agreement will be subject to prior agreement with Client. Client will have the right to refuse its consent to the publication until an application for intellectual property rights protection has been filed, but in no event for a period exceeding three (3) months from submission of the proposed publication. If the proposed publication contains confidential or proprietary information of Client, Client will have the right to demand that the confidential or proprietary information be deleted from the publication. Unless Client, within four weeks of receipt of the complete documentation of a proposed publication (original text), objects to such publication or demands that confidential or proprietary information be deleted, Client's consent shall be deemed given.
- (3) Where examination requirements (for *Diplom*, bachelor's, master's, doctoral degree, or *Habilitation* programs, etc.) are affected by the candidate's involvement in the R&D, Client shall, according to University policy, reasonably comply with the legal obligations and justified interests of said candidate.
- (4) The above provisions will supersede any prior confidentiality agreements/non-disclosure agreements entered into in connection with the subject matter pursuant to § 1, section (1).

§ 4 Background Intellectual Property, Third-party Intellectual Property Rights

- (1) Each Party will remain the owner of any knowledge (including, but not limited to, know-how, copyrights, computer programs, inventions, and any intellectual property rights applied for or granted for such inventions) gained or developed prior to the commencement of the R&D, or yet to be developed outside the parameters of the subject-matter of the Agreement pursuant to § 1 (1), including, without limitation any data provided by Client to University in connection with the R&D (all such materials collectively referred to as "Background Intellectual Property").
- (2) University shall inform Client prior to the commencement of and continually throughout the R&D, to the best of its knowledge and belief, of (i) any Background Intellectual Property relating to the subject-matter, provided that this is necessary for the conduct of the R&D or the use of the Results, and (ii) of any third-party rights in the Background Intellectual Property. Further, University shall inform Client to the best of its knowledge and belief about any third-party intellectual property rights of which it is aware. In the event that any third-party intellectual property rights are asserted, University and Client will consult with each other on how to proceed.
- (3) To the extent that the Parties' Background Intellectual Property is necessary for the conduct of the R&D and there are no adverse third party rights, the Parties will grant each other a free and non-exclusive right of use limited to the term and purpose of the R&D; unless otherwise provided for, this right of use will not automatically entitle a Party to a continued use of these rights.
- (4) University will not use in performance of the Research or incorporate any University Background Intellectual Property into any Results without first identifying such Background

Intellectual Property to Client. To the extent that University's Background Intellectual Property is incorporated into the Results and there are no adverse third-party rights, University grants Client a nonexclusive, royalty free, fully paid, perpetual, irrevocable, worldwide right and license to use the Background Intellectual Property for internal research purposes.

§ 5 Rights to R&D Results

- (1) The rights to any proprietary methodologies, tools, models, software, hardware, discoveries, designs, prototypes, documentation, ideas, know-how, trade secrets, inventions or works of authorship, algorithms, protocols, APIs, molds, practices, schematics, diagrams, specifications, formulae, test parameters, measurements, and any other items developed in connection with the R&D ("Results"), except for Results protectable under intellectual property laws in accordance with § 6 and copyrighted Results in accordance with section (2), will vest in Client upon receipt of payments of the remuneration set out in § 2 (1), subject to the rights of University pursuant to § 8.
- (2) If the Results, to the extent that University is entitled thereto, are protected by copyright, University grants Client a non-exclusive, transferable, worldwide, irrevocable, sublicensable right in perpetuity to use such Results, in the original or in changed form, in any and all forms of use (including without limitation the right to process, reproduce and/or commission the reproduction of said Results), and to grant rights of use to third parties for any and all forms of use, subject to the rights of the University pursuant to § 8.

§ 6 Rights to Inventions and Intellectual Property Rights

- (1) University shall notify Client without delay of any invention(s) or inventive contribution(s) disclosed to University by its employees in connection with the R&D specified in § 1. In the case of joint inventions the Parties shall ensure that the joint inventors mutually determine each inventor's inventive share and declare it in the invention disclosure report with binding effect. To ensure equal opportunities, the joint inventors are required to provide University and Client with identical invention disclosure reports at the same time. To ensure this, Client will have the right to require that persons involved in the project sign the letter of commitment attached as Appendix 1 to this Agreement. University shall assist Client in obtaining this document and shall only involve persons who have signed it.
- (2) Once Client, promptly after signing the Agreement, has paid a 15% IA surcharge on the remuneration set out in § 2 (1) in the amount of € 33.913,52 (in words: thirty three thousand nine hundred and thirteen and fifty-two euros) plus the statutory VAT, the rights in and to inventions and inventive contributions pursuant to (1) will be assigned to Client upon full payment of the agreed-upon remuneration including the IA surcharge, subject to the rights set out in § 8. University shall not release any (co-) inventors' rights in the inventions and/or inventive contributions pursuant to (1) to the inventors and shall assign University's rights in patent applications to Client.

§ 7 Application for Intellectual Property Rights Protection, Use of Intellectual Property Rights

- (1) Client shall bear the costs for application, maintenance and defense of the intellectual property rights assigned to Client for as long as Client claims these rights. If Client requires any explanations or declarations from University in order to acquire these rights, University shall provide them upon request. University shall, upon request, obtain all documents and declarations that must be officially signed by the University's co-inventors in the course of the patent application process (for example, US assignment or PCT inventor declaration). Any costs incurred shall be borne by Client.
- (2) The first application for an intellectual property right giving rise to priority shall be made by Client and by University as joint applicants. University shall provide the necessary declarations and signatures to Client and to the registration office, if required. For University's inventors, University shall complete the designation of inventor form for submission to the Patent Office. Client will file the application and send copies to University. Client shall bear any costs incurred in the application for and prosecution and maintenance of the intellectual property right.

University's status as applicant is merely in the capacity as trustee for Client. As between the parties Client shall be exclusively entitled to the intellectual property right including the priority right. After publication of the application giving rise to a right of priority [as a rule, upon expiration of 18 months from the filing date (priority date)], University will consent to the assignment of the intellectual property right in question to Client and will provide the required declarations.

Any additional foreign applications will be filed by Client in Client's name and Client will decide, at its sole discretion, in which countries to file foreign applications. Client undertakes to keep University informed of any patent applications resulting from the above first application and any patents granted thereon.

- (3) Client will use good faith efforts to commercialize the intellectual property rights as Client deems appropriate. If University suspects that Client does not intend to commercialize the intellectual property rights, University may contact Client and inquire about Client's plans to exploit the intellectual property rights.

§ 8 Rights of University

Notwithstanding the provisions contained in §§ 5 through § 7 University and its employees involved in the R&D activities will retain in any event, for their own internal purposes in research and teaching only a non-transferable, non-exclusive, worldwide right of use in perpetuity to the results and rights set out in §§ 5 and 6. For the avoidance of doubt, such right does not permit University to work with third party commercial partners in the augmented/virtual reality fields.

§ 9 Warranty, Liability

- (1) University shall carry out the agreed-upon research activities with its customary diligence and according to the current state of science and technology as known to University. There will be no warranty; in particular there will be no warranty that the Results of the Research and

Development Agreement will be economically and technically usable and unencumbered by third-party intellectual property rights. To the extent that any conflicting third party intellectual property rights become known, University shall inform Client accordingly without delay.

- (2) In the event of a breach of material contractual obligations (i.e. obligations that are essential for the proper performance of the Agreement, and compliance with which can, as a rule, be relied upon by the other Party), the Parties, their statutory agents and persons employed to perform obligations on behalf of the Parties, shall be liable for damage caused by intent and any negligence; however, in the event of slight negligence, liability shall be limited to the contract-typical, foreseeable damage.
- (3) In all other cases, the Parties, their statutory agents and persons employed to perform obligations on behalf of the Parties, shall be liable to each other only for damage caused by intent or gross negligence. In the event of gross negligence liability shall be limited to the amount of the Agreement.
- (4) Any liability pursuant to section (3) for indirect and consequential damage shall be excluded in the event of gross negligence.
- (5) The limitation of liability and/or exemption from liability provided for in sections (2) through (4) shall neither apply in the event of injury to life, body, or health nor in the event of claims under the German Product Liability Act.

§ 10 Early Termination

Each Party is entitled to terminate this Agreement for breach by the other party, wholly or in part, by giving the other party written notice of such termination; provided, however, that such termination will not be effective if the breaching party cures such breach within 30 days after written notice of breach from the non-breaching party. If such breach remains uncured, the Agreement will automatically terminate. In the event of early termination of the Research and Development Agreement pursuant to the previous sentence, no further R&D will be carried out by University from the time of termination. University will provide the Results obtained thus far to Client and Client's rights set forth in §§ 5 and 6 shall vest immediately following full payment of any expenses in accordance with this section, provided that the IA-Surcharge of § 6 section (2) already has been fully paid. Client shall pay University for expenses incurred in connection with the R&D up until the date of early termination. Further, Client shall reimburse University beyond the date of early termination of the Research and Development Agreement, provided that University is not responsible for the termination, for those expenses to be incurred in fulfillment of legal obligations in conjunction with the Research and Development Agreement that cannot be cancelled, unless University, in breach of duty, has failed to ensure that those legal obligations are terminated in time. In the event of early termination, the expenses to be reimbursed to University beyond the date of termination shall not exceed the total of the funds projected for the performance of the project pursuant to § 2, section (1).

§ 11 Written Form Requirement, Severability

Any alterations, modifications, amendments and collateral agreements must be in writing. This requirement may be waived only in writing. Should any provision of this Agreement be or become invalid, this shall not affect the validity of the remaining provisions. To the extent possible under law and jurisdiction, any invalid provision shall be replaced by a valid provision which corresponds to the meaning and purpose of the invalid provision.

§ 12 Entry into Force, Term

This Agreement shall become effective upon signature by both Parties.

§ 13 Applicable Law, Venue

This Agreement shall be subject exclusively to the law of the Federal Republic of Germany without regard to its conflict of law provisions. Exclusive venue shall be Munich, Federal Republic of Germany.

§ 14 Reports

University will furnish Client with written reports (form will be mutually agreed by the Parties) during the term of this Agreement summarizing the R&D no less frequently than quarterly. Such reports will include a description of the progress and activities of the R&D during the applicable reporting period and in accordance with the milestone schedule set forth in Appendix 2. In addition, such reports will identify any delays that occurred during the applicable reporting period or are reasonably anticipated to occur during a future reporting period, and will include a proposal or recommendation for any adjustments that may be necessary to the milestone schedule as a result of such delay. A final report setting forth the accomplishments and significant R&D findings and identifying all Results will be prepared by University and submitted to Client within ninety (90) days of the completion of the R&D. During the term of this Agreement, representatives of University will meet with representatives of Client upon Client's request at times and places (for example also Skype or other online meetings are possible) mutually agreed upon by the Parties to discuss the progress of the R&D.

§ 15 Assignment

Neither Party may assign this Agreement or any of its rights or obligations under this Agreement without the prior written consent of the other Party; provided, however, that Client may assign this Agreement to an affiliate without prior written consent. Such affiliate will assume in writing the obligation to perform in accordance with the terms and conditions of this Agreement. Any other purported assignment in violation of this section will be void.

§ 16 Independent Contractors

Nothing in this Agreement creates any relationship between the Parties other than that of independent contractors. Neither Party will hold itself out as an agent, subsidiary, or affiliate of the other Party or have any authority to bind the other Party to any third-party obligations.

Facebook Technologies, LLC



Redmond, WA. 6/7/2019
(Place, date)

Munich
Signature (Client)

Technical University of Munich

Munich, 07.05.2019
TECHNISCHE UNIVERSITÄT MÜNCHEN
TUM Legal Office - ZA 5
Forschungskooperationen
Kunze-Schön
80333 München
TUM Legal Office - ZA 5
Ref. 52 - Forschungskooperationen

Garching, 24.6.19
(Place, date)

Dr. Daniel Cremers
Professor Dr. Daniel Cremers

Appendix 2

STATEMENT OF WORK

Research Project: Refinement of 3D surfaces obtained by RGB-D sensors

Research Purpose: Development of an algorithm for the refinement of reconstructions by RGB-D sensors

Research Description: The project is targeted at improving reconstruction of 3D surfaces obtained by RGB-D sensors with a focus on (possibly moving) clothed individuals.

Milestones and Deliverables:

The purpose of the project is to develop an algorithm for improving low-resolution RGB-D reconstructions of clothed individuals. As an outcome, we plan to submit one or more papers to CVPR or SIGGRAPH.

Timeline:

Deliverable	Due Date
Reproduce state of the art, setup qualitative and quantitative benchmarks (code + data)	10/1/19
Research on advancing state of the art, focus on data-driven methods (code + data)	4/1/20
Project wrap up, publication of results, final working solution (code + data)	4/30/21

University Personnel Resources:

Key Personnel:

1. ~~Daniel Cremers~~, TU Munich (Germany)
2. ~~Zorah Löhner~~, TU Munich (Germany)

The time commitment of the Key Personnel and other University personnel who participate in or perform Research is as follows: one PhD student at 70%, the PI Daniel Cremers at 4%.

Research Budget: The research budget as defined in § 2 of the Agreement is specified in Euro and will be converted to equivalent amount in USD on the day of each payment. The total payment amount for two years of sponsored research € 260.003,63..

Client Materials: Geometry scans, if and as made available to University by Client.

License to Client Materials. Client reserves all its right, title and interest in and to the Client Materials and any Intellectual Property Rights therein or thereto. Client hereby grants to University the right to use the Client Materials solely for the performance of the "Refinement of 3D surfaces obtained by RGB-D sensors" project described in this SOW, and in accordance with §4(3) of this Agreement. University will not use the Client Materials for any other purpose without the express prior written consent of Client. University will return all Client Materials to Client upon Client's request and, in any event, when the Client Materials are no longer needed by University for the performance of the R&D.