

REQUEST RFP_2018_3902 (3903)



Smartphone Facial Image Analysis Technology to Measure Sebum, Melanin Levels, Pigmentation or Cell Turnover

RESPONSE DUE DATE: **December 26, 2018**

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Opportunity

Joint/contract development, technology licensing

Timeline

Phase 1 – Concept verification: 6 months
 Phase 2 – Technology development: 1 year after Phase 1

Financials

Necessary development expense will be covered
 (Details to be discussed).



*Shiseido: SHISEIDO CO., LTD. and SHISEIDO JAPAN CO., LTD.

DESCRIPTION

NineSigma, representing **Shiseido*** (<http://www.shiseidogroup.jp/>), seeks **analysis technology of photographic image taken by smartphones that can enable measurement of any one of indices such as sebum, melanin levels, pigmentation, or cell turnover in facial skin.** Shiseido believes that many such technologies have already been developed and implemented and hopes to receive proposals from organizations with experience in this area. We are aiming to implement proposed technologies and ideas on commercial products (apps), which are due to be released in 2020.

Requirement of the face picture for analysis

Images must conform to the following size and include the entire face of the targets (Japanese people).

- Size: 1932x2576 pixels (The standard is a popular iPhone's front camera)

The development target

- All or **any of** the following measurement items or alternative indices correlated to those items can be measured by processing the aforementioned photographic images taken by smartphones.
 - Sebum level



Fig. An example of face picture for analysis

- The condition of the skin sebum must be measurable by analyzing the oiliness, stickiness, gloss, smoothness.
- Melanin level
 - Not local color irregularity such as spots and freckles but the melanin level as overall ground color of the skin must be measurable.
 - Local melanin pigmentation
 - Spots and freckles of skin surface must be measurable by analyzing the local melanin pigmentation.

- Skin cell turnover
 - The skin cell turnover must be measurable by analyzing the skin stiffness or roughness, etc.
 - Specific analysis object related to the skin cell turnover
 - Phenomena by a fast turnover: dry skin, rough skin (parakeratosis)
 - Phenomena by a slow turnover: stiffness, dullness

**Theory of skin cell turnover: A cell called keratinocytes produced in stratum basale move upward to the stratum corneum on the skin surface in 4 weeks. 2 weeks after the cell moved up to the skin surface, the surface cells die and cast off as scurf. This 6-week process is called turnover.*

- The technology must enable the analysis of the aforementioned physical properties of the entire face in the photograph, rather than just parts of the face.
- It is preferable that the measured indices have a correlation with a measurement result by skin diagnostic apparatus for research.
- It is preferable that the technology be capable of consistent analysis of images taken in various lighting environments with varying lighting sources and positions. However, we also welcome technologies to analyze images taken with specific lighting sources and positions.

APPROACHES NOT OF INTEREST

The following approaches are not of interest:

- Technologies with no history of application to facial images.

BACKGROUND

Shiseido, a client of NineSigma, seeks a technology that can enable measurement of indices such as sebum and melanin levels and pigmentation and cell turnover in facial skin based on full facial photographic images of targets, with the aim of being able to measure skin conditions in a simple manner.

Shiseido also believes that many such technologies have already been developed and implemented globally and that among these technologies there must be one that will satisfy its requirements.

Therefore, Shiseido has issued this open request in order to further accelerate their technology

development and thereby establish such technology quickly.

ITEMS TO BE SUBMITTED

[NineSights](#), the platform of NineSigma's Open Innovation community, allows you to manage all your proposals. Please contact the Solution Provider Help Desk phd2@ninesigma.com for assistance about registration and proposal submission.

Proposal may include the following items along the response form shown by clicking the "Respond" button.

- Overview, principles and uniqueness of the technology
- Physical properties or indices that can be measured by the proposed technology (sebum level / melanin level / pigmentation / skin cell turnover)
- Current performance
 - Conditions for photography (type and position of light source, etc.)
 - Case examples of photographing and analyzing images
 - Measurement results (numeric data, error and precision, etc.)
 - Level of consistency across photographic environmental variations such as lighting angle
- Requests regarding the form of collaboration with Shiseido
- Current challenges and future plan to meet the requirement (timeline and cost)
- Organization overview

NOTES ON RESPONSE

Proposal shall have clear points and should not include confidential information. Supplemental files may be submitted in addition to the proposal.

RESPONSE EVALUATION

The client will evaluate all responses with the following criteria.

- Overall scientific and technical merit
- Approach to proof of concept or performance
- Economic potential of concept
- Realism of the proposed plan (action items, timeline, roles, deliverables, cost estimation)
- Potential for proprietary position

- Respondents' capability and related experiences

ANTICIPATED PROJECT PROCESS

After reviewing submitted proposals, the client possibly ask clarifying questions before selecting the most suitable candidates for collaboration. The client will select best candidates through evaluations. During the selection process, the client may execute NDA with selected respondents, seek further information disclosure, and discuss specific development targets or potential opportunities.

The client will execute necessary agreements with the selected respondents and move to the advanced development phase. Specifics of any collaboration will be determined through consultation with the concerned parties.

FREQUENTLY ASKED QUESTIONS

Please see the following FAQ link.

<https://www.ninesigma.com/guide-to-writing-proposals>